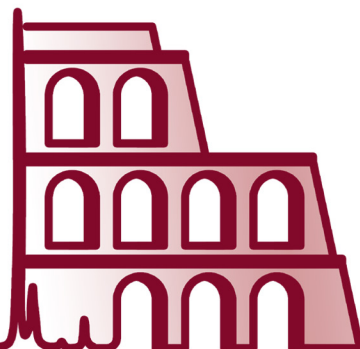


XXVIII ICORS

2024
ROME
Italy



Hosting Institution:



SAPIENZA
UNIVERSITÀ DI ROMA

July 28th - August 2nd

Rome - Italy

A panoramic view of Rome, Italy, showing various domes, churches, and buildings against a backdrop of mountains. The image is in a muted, sepia-toned color palette.

PROGRAM BOOK

www.icors2024.org

Sponsors

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Exhibitors



Other Sponsors



Journals



Welcome by ICORS-2024 Chairs

We are delighted to gather once again the Raman community, for the first time in Italy, at "Sapienza" University of Rome.

If all roads lead to Rome, ICORS has taken a very long one! Starting with a bid in 2016, sailing through a pandemic and strengthened by a terrific collaboration with the Southern California team, the 28th edition of ICORS is finally mooring in the Eternal City!

There is a deep link between Rome and the Raman effect, dating back to 1926, when Enrico Fermi took over the chair of theoretical physics at the University of Rome, establishing the famous "via Panisperna group". Chandrasekhara Venkata Raman received his Nobel Prize in 1930, for the effect he first observed in liquids in 1928. The new discovery was highly inspirational for Franco Rasetti, the last survivor of the Panisperna group, who was the first to demonstrate the Raman effect in gases (F. Rasetti, "Raman Effect in Gases," [Nature 123, 205 (1929)]).

Featuring 2 satellite events, an Editors roundtable, a talk by the most important European funding agency (ERC), 8 plenary speakers, 50 keynote and over 100 Invited lectures ICORS2024 will offer a unique platform for students, researchers, policymakers, editors and companies to come together, share knowledge, and collaborate towards our common goal of advancing Raman spectroscopy and its applications, in a friendly and respectful atmosphere.

We are looking forward to meeting you in Rome!



CONFERENCE CHAIR
Tullio Scopigno

"Sapienza" University
(Italy)



CONFERENCE CHAIR
Giulio Cerullo

Politecnico di Milano
(Italy)



CONFERENCE CHAIR
Ara Apkarian

University of California
(Irvine)



CONFERENCE CHAIR
Judy Kim

University of California
(San Diego)



CONFERENCE CHAIR
Eric Potma

University of California
(Irvine)

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Committees



CHAIRS

CONFERENCE CHAIR

Tullio Scopigno

"Sapienza" University (Italy)

CONFERENCE CHAIR

Giulio Cerullo

Politecnico di Milano (Italy)

PROGRAMME CHAIR

Ara Apkarian

University of California (Irvine)

PROGRAMME CHAIR

Eric Potma

University of California (Irvine)

PROGRAMME CHAIR

Judy Kim

University of California (San Diego)

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Christopher Elles, *University of Kansas*

Karen Esmonde-White, *Endress+Hauser*

James Lambert, *NASA/JPL*

Igor Lednev, *University at Albany*

Marco Leona, *MOMA, New York*

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Shaul Mukamel, *UC Irvine*

Anne Myers Kelly, *UC Merced*

Larry Nafie, *Syracuse University*

George Schatz, *Northwestern University*

Lu Wei, *Caltech*

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Luciano Galantini, *Sapienza, Chem. Dep.*

Margherita Mazzola, *Sapienza, CTF Dep.*

Patrizia Pasolini, *Symposia Srl*

Constanza Pelissero, *Symposia Srl*

Shahram Rahatlou, *Sapienza, Phys. Dep.*

Nicolò Spagnolo, *Sapienza, Phys. Dep.*

Francesca Del Duca, *Symposia Srl*

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Young Mee Jung (South Korea)

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Yuling Wang (Australia)

Angela Hight Walker (USA)

Nai-Teng Yu (China)

SL Zhang (China)

Lawrence Ziegler (USA)

Program at a glance

DAY	TIME	PROGRAM AT A GLANCE							
SUN July 28	9:00a-4:00p	Registration open all day	Satellite Event: Raman School (Day 1)						
	4:30p-6:30p		Satellite Event: Photothermal Workshop						
	5:00p-8:00p		ICORS WELCOME RECEPTION						
MON July 29	8:00a-	Registration (open all day)							
	8:40a-9:00a	OPENING CEREMONY							
	9:00a-9:45a	PLENARY							
	9:45a-10:15a	Coffee Break							
	10:15a-11:45a	SERS/TERS	TC	Imaging	Novel	Ind. Apps	Bio	Materials	Planetary/Geo
	11:45a-12:00p	Pause							
	12:00p-1:15p	SERS/TERS	TC	Imaging	Novel	Ind. Apps	Bio	Materials	Planetary/Geo
	1:15p-2:15p	LUNCH							
	2:15p-3:00p	PLENARY							
	3:00p-3:15p	Pause							
	3:15p-4:45p	SERS/TERS	TC	Imaging	Novel	Ind. Apps	Bio	Materials	Planetary/Geo
	4:45p-5:15p	Coffee Break							
5:15p-7:15p	SERS/TERS	NL/TR	Imaging	Novel	Ind. Apps	Bio	Materials	Planetary/Geo	
TUE July 30	8:45a-9:30a	PLENARY							
	9:30a-10:15a	PLENARY							
	10:15a-10:45a	Coffee Break							
	10:45a-12:45p	POSTER SESSION							
	12:45p-1:15p	European Research Council				Editors Roundtable			
	1:15p-2:15p	LUNCH							
	2:15p-5:00p	Free Time							
5:00p-late	CONFERENCE TOUR AND SOCIAL DINNER								
WED July 31	8:45a-9:30a	PLENARY							
	9:30a-9:55a	Coffee Break							
	9:55a-10:20a	Sponsor	Sponsor	Sponsor	Sponsor	Sponsor	Sponsor	Sponsor	
	10:20a-11:50a	SERS/TERS	TC	Imaging	Novel	Ind. Apps	Bio	Materials	Imaging
	11:50a-12:00p	Pause							
	12:00p-1:15p	SERS/TERS	TC	Imaging	Novel	Ind. Apps	Bio	Materials	Ind. Apps
	1:15p-2:15p	LUNCH							
	2:15p-3:00p	PLENARY							
	3:00p-3:15p	Pause							
	3:15p-4:30p	SERS/TERS	TC	Imaging	Novel	Ind. Apps	Bio	Materials	Hot topics
4:30p-5:00p	Coffee Break								
5:00p-7:30p	SERS/TERS	NL/TR	Imaging	Novel	Ind. Apps	Bio	Materials	SERS/TERS	
THU Aug 1	8:45a-9:30a	PLENARY							
	9:30a-10:00a	Coffee Break							
	10:00a-12:30p	SERS/TERS	NL/TR	Imaging	SERS/TERS	Ind. Apps	Bio	Materials	Ind. Apps
	12:30p-1:30p	LUNCH							
	1:30p-2:45p	SERS/TERS	NL/TR	Imaging	Novel	Ind. Apps	Bio	Materials	Bio
	2:45p-3:00p	Pause							
	3:00p-5:15p	SERS/TERS	NL/TR	Imaging	Novel	Ind. Apps	Bio	Materials	Bio
	5:15p-5:30p	Pause							
5:30p-7:30p	POSTER SESSION								
FRI Aug 2	8:45a-11:00a	SERS/TERS	Ind. Apps	Imaging	SERS/TERS	Ind. Apps	Bio	Materials	
	11:00a-11:30a	Coffee Break							
	11:30a-12:15p	PLENARY							
	12:15p-1:00p	CLOSING CEREMONY							
	1:00p-2:00p	LUNCH							
	2:30p-5:30p	Satellite Event: Raman School (Day 2)							
	5:30p-7:30p	Free Time							
7:30p-late	ICORS FAREWELL DINNER								

Legend for General Session Topics	SERS/TERS	SERS, TERS, and Plasmonics	Materials	Materials
	TC	Theory and Computation	Planetary/Geo	Planetary and Geosciences
	Imaging	Coherent Raman Imaging	NL/TR	Non-linear and Time-resolved
	Novel	Novel Approaches	Hot topics	Post-deadline topics
	Ind. Apps	Industrial and Societal Applications	Sponsor	Industry Sponsors
	Bio	Biology and Biomedicine		



Conference venue

SAPIENZA UNIVERSITY OF ROME

Sapienza's story begins in 1303, when Pope Boniface VIII founded the Studium Urbis, Rome's first university.

The Studium Urbis gradually grew more prestigious. In 1363, it began to receive a permanent subsidy from the City of Rome and soon grew too large for its original site in the Trastevere area.

In 1431, Pope Eugene IV reorganised the university, appointed four administrators to help the Rector and purchased a series of buildings in the Rione Sant'Eustachio area between Piazza Navona and the Pantheon in what is now downtown Rome.

The Roman University received new lymph in the mid-eighteenth century when Pope Benedict XIV reformed the university's degree courses and procedures for hiring professors. Benedict XIV also introduced new courses, such as experimental physics, chemistry and mathematics, and brought the degree programmes from three to five: Sacred Studies, Law, Medicine and Surgery, Humanities (Arts and Philosophy) and Languages. A practical man, Pope Benedict also provided the university with all the resources that were necessary to enact the many new reforms.

Today, Sapienza is Europe's largest university with ca. 145,000 students and over 10,000 employees, including professors, staff and technicians.

The reforms enacted at the end of the 1990s, increased the number of degree programmes and the infrastructure at Sapienza.

In 2010, the university adopted a new statute, based on rationalisation and meritocratic principles. The Faculties (which were halved) were called to coordinate and supervise academic life, while 67 Departments became responsible for all didactic and research activities.



SAPIENZA
UNIVERSITÀ DI ROMA

UNIVERSITY ORGANISATION

- Faculties: 11
- Departments: 63
- Libraries: 59
- University Hospitals: 2
- Museums: 20

TOTAL STUDENT POPULATION:
145.000

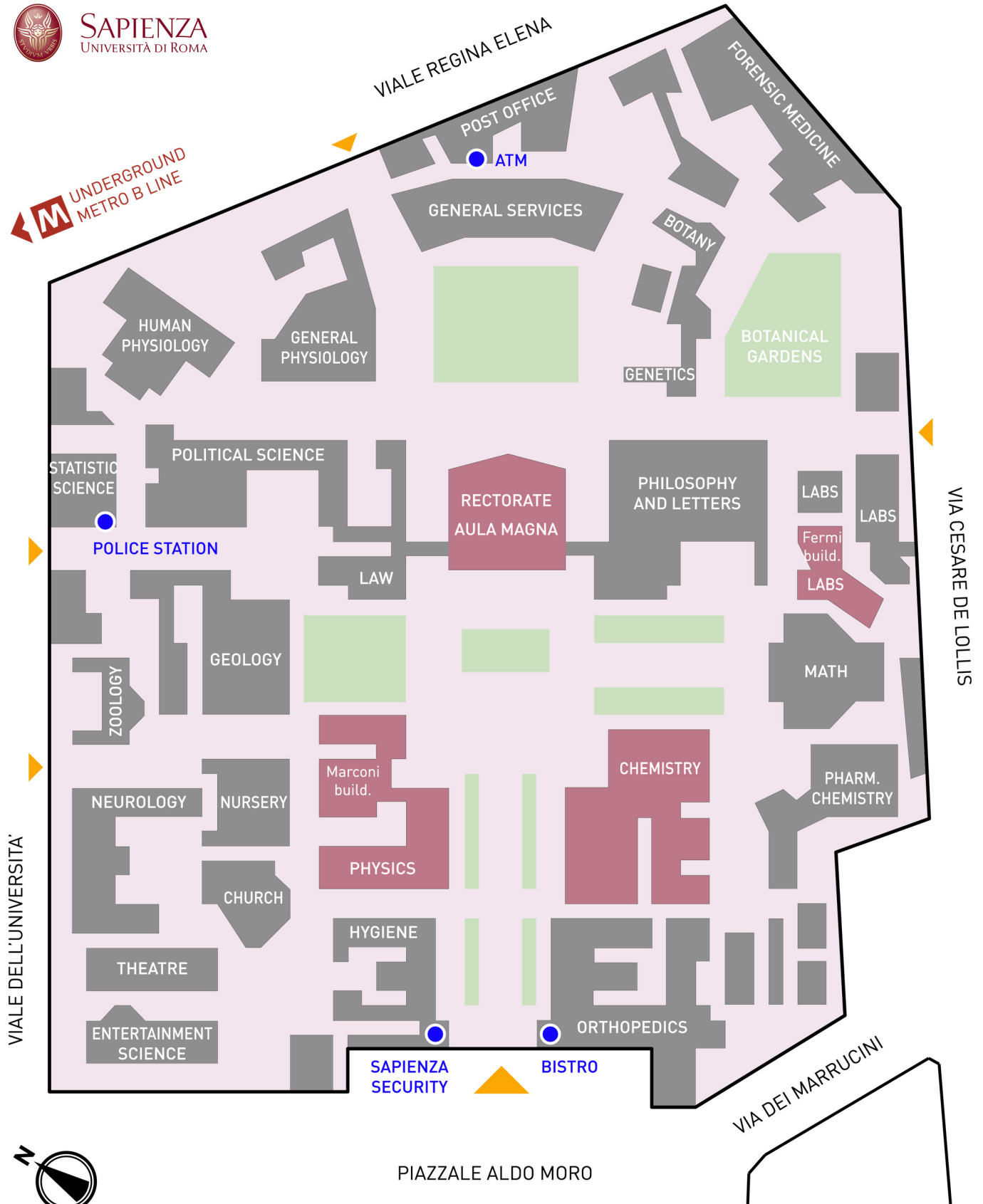
ONE OF THE **OLDEST**
UNIVERSITIES
IN THE WORLD

Conference venue

SAPIENZA UNIVERSITY - CAMPUS MAP



SAPIENZA
UNIVERSITÀ DI ROMA





SAPIENZA UNIVERSITY - CONFERENCE ROOMS

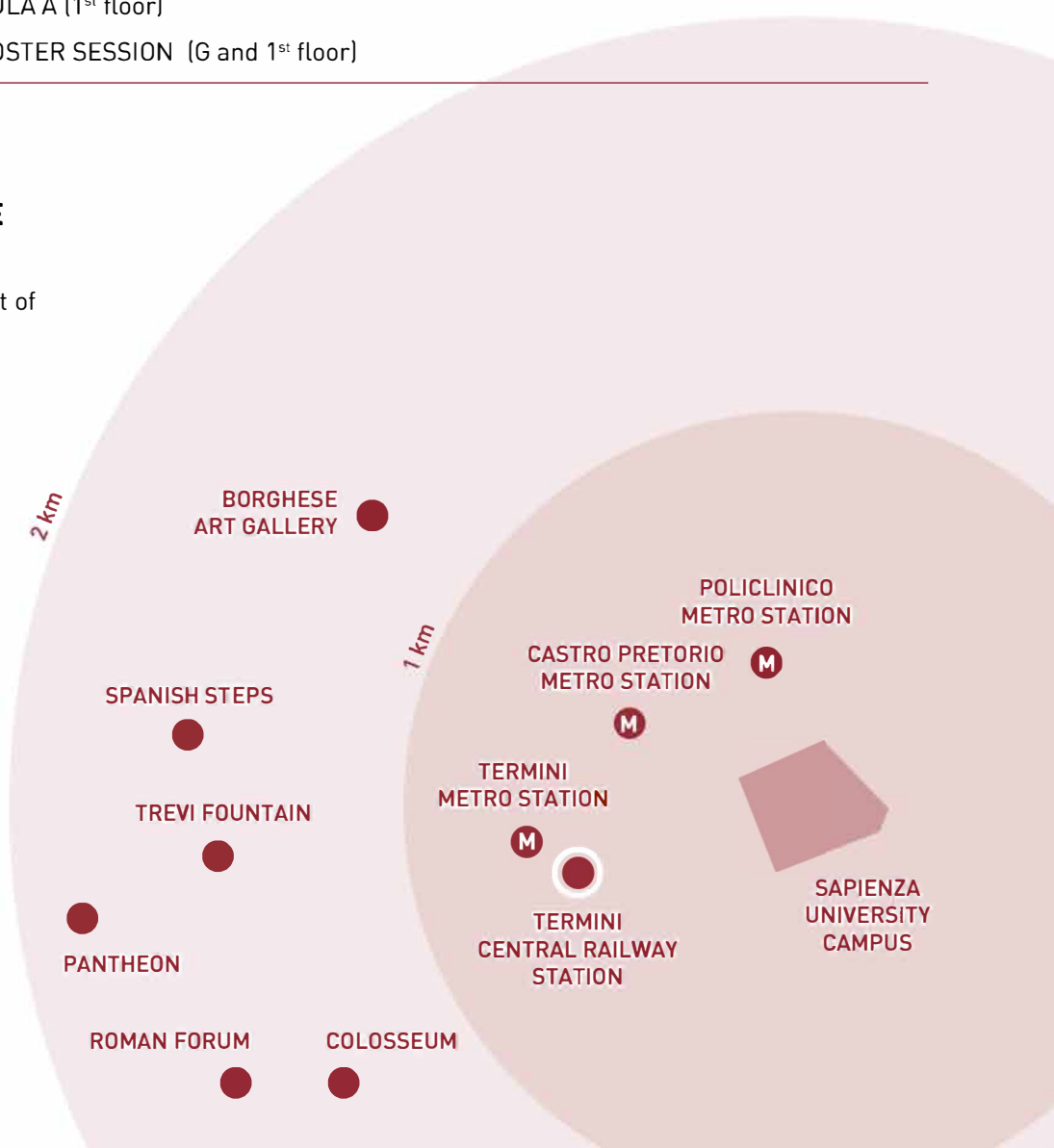
BUILDING	ROOMS	CONFERENCE FACILITIES
RECTORATE	AULA MAGNA (1 st floor)	REGISTRATIONS (from July 29 th to August 2 nd) CASHIER (from July 29 th to August 2 nd)
MARCONI (Physics Dept.)	AMALDI (1 st floor) CONVERSI (1 st floor)	REGISTRATIONS (only on July 28 th) CASHIER (only on July 28 th) CLOAKROOM (only on 28 th July and August 2 nd)
FERMI (Physics Dept.)	CABIBBO (G floor) AULA 3 (2 nd floor) AULA 4 (2 nd floor)	
CHEMISTRY	GINESTRA (1 st floor) AULA A (1 st floor) POSTER SESSION (G and 1 st floor)	

HOW TO REACH THE VENUE

The campus is located in the heart of Rome, close to Termini Central Railway station, that is served by shuttle trains and buses from Rome Fiumicino and Rome Ciampino international airports.

From Termini Central Railway station, the Sapienza University Campus is easily reachable:

- **walking**
(14 minutes from the Termini exit on via Marsala)
- **by subway**
(metro **B** line to "Jonio" or "Rebibbia", get off at "Policlinico" stop, which is about 7 minutes far from the campus on foot).



Satellite events

RAMAN SCHOOL

ICORS will be preceded by the CHARISMA Raman School 2024, a satellite event organized by The H2020 CHARISMA Project, hosted by ICORS at Sapienza University of Rome.

The school will take place on 28 July 2024 (Sunday), bringing together Raman scholars and manufacturers worldwide. The goal is to foster an exchange of insights and ideas concerning the most recent advancements in Raman-related research. In addition to presentations by expert researchers, a practical/hands-on session is planned to take place on 2 August 2024 (Friday) as part of the School at the university facilities.

Raman School 2024 focuses on the relevance, impact, needs, state-of-the-art of harmonisation in different techniques and fields of application.

School Topics:

- Fundamentals of Raman spectroscopy: setting up a Raman correctly, parameters that affect your data, best practices
- Raman techniques: how to select the adequate technique, what you need for each technique and how and use them correctly
- Data processing and analysis: correction on Raman spectra, how to apply data science
- Raman harmonisation and standards
- In vivo, in situ and operando Raman characterisation
- Applications of Raman spectroscopy and market opportunities
- Raman data repositories and FAIR data

Check the agenda on <https://icors2024.org/raman-school/>.

Confirmed Speakers:

Alessio Sacco (Istituto Nazionale di Ricerca Metrologica, INRiM)

Angela Hight-Walker (NIST)

Enrique Lozano (CHARISMA, ELODIZ)

Giovanni Batignani (Sapienza University of Rome)

James Thomson (CHARISMA, ELODIZ)

Jörg Weber (Biophotonics Diagnostics GmbH)

Katsumasa Fujita (Osaka University)

Li-Lin Tay (National Research Council Canada)

Lorenzo Bastonero (Universität Bremen)

Miguel Bañares (CHARISMA, CSIC)

Pietro Marabotti (Humboldt University Berlin)

Raquel Portela (CHARISMA, CSIC)

Riccardo Tagliapietra (Renishaw PLC)

Yasuaki Kumamoto (Osaka University)





PHOTOTHERMAL WORKSHOP

Sub-500nm IR and Simultaneous Raman microscopy with co-located fluorescence imaging O-PTIR technology, recent advances, and applications overview

Hosted by Photothermal Spectroscopy Corp @ "Sapienza" University, Rome, Italy, Sunday, July 28, 4:30-6:30 pm

The workshop will discuss recent advances and applications in multimodal imaging with sub-500nm IR (O-PTIR) with simultaneous Raman (IR+Raman) and now, with co-located widefield fluorescence imaging.

Applications examples will focus on life sciences, live cell/tissues, simultaneous SERS & SEIRA, materials/polymers and particulates/microplastics.

Additionally, we will introduce a brand-new innovation, Widefield O-PTIR imaging, powered by FLuorescence detected Photothermal IR (FL-PTIR), allowing for true widefield chemical snapshot imaging with <500nm IR spatial resolution of fluorescently labelled or autofluorescent samples, whilst also generating simultaneous fluorescence widefield images.

The workshop will feature talks from world leading experts, a live online demo as well as an introduction and background from the host, Photothermal Spectroscopy Corp (PSC).

Time	Speaker	Title
04:30-04:50 pm	Dr Mustafa Kansiz PSC	Sub-500nm IR (O-PTIR) and simultaneous Raman microscopy with co-located fluorescence imaging
04:50-05:30 pm	Prof Ji-Xin Cheng Boston Uni (Keynote Speaker)	Recent advances in Mid-infrared photothermal microscopy
05:30-05:50 pm	Coffee Break	
05:50-06:10 pm	Live Instrument Demo	Live demonstration of sub-500nm IR+Raman and the new Widefield O-PTIR imaging
06:10-06:30 pm	Prof Zac Schultz Ohio State Uni, USA	Simultaneous O-PTIR and SERS, vibrational spectroscopy of cancer cells

More information available on the dedicated page <https://icors2024.org/photothermal-workshop/>.





COFFEE BREAKS AND LUNCHES

- Coffee and tea breaks are included in the registration fee.
- Lunches are available during the conference

WELCOME RECEPTION

Sapienza University – Sunday, July 28th, 2024, 5.00 PM

Meeting point: Università La Sapienza – Marconi Building

Price:

- included in all fees and for accompanying persons



CONFERENCE TOUR AND SOCIAL DINNER

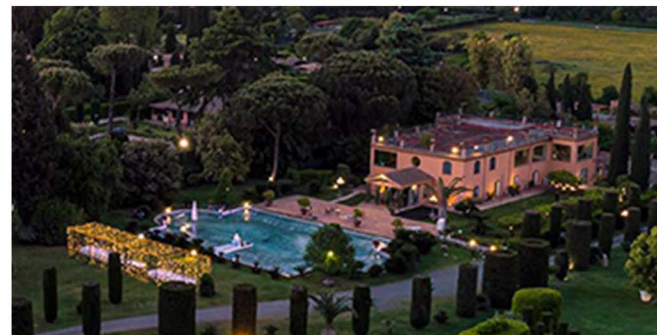
Appia Antica and Villa Dino – Tuesday, July 30th, 2024, 5.30 PM

The dinner starts at 7:30 PM

Meeting point: Università La Sapienza, Piazzale Aldo Moro, 5 – 4:20 PM

With its 2300 years of history, the Appia Antica shows intact the signs of an illustrious and fascinating past, still clearly visible among the ruins that line the edges of the road.

Villa Dino is a magnificent Roman villa with an extensive private park, abundant in archaeological artifacts.



FAREWELL COCKTAIL

La Limonaia - Friday, August 02nd, 2024, 7:30 PM

Meeting point: La Limonaia

The Farewell Party will be organized in a bright and welcoming environment with a splendid view of the Villa Torlonia Theatre.

Come and enjoy the amazing evening with music entertainment!





General Information Booklet

REGISTRATION DESK

The registration desk: on Sunday, July 28th at the Marconi building; from Monday, July 29th, to Friday, August 2nd, at the Rectorate, Sapienza University of Rome (Building U001).

The opening days and hours are as follows:

- Monday, July 29th: 8:00 AM – 7:15 PM
- Tuesday, July 30th: 8:15 AM – 5:00 PM
- Wednesday, July 31st: 8:15 AM – 7:30 PM
- Thursday, August 1st: 8:15 AM – 7:30 PM
- Friday, August 2nd: 8:15 AM – 1:00 PM

NOTE

Only on Sunday, July 28th, from 3:00 PM to 6:00 PM, the registration desk is situated on the **ground floor of Marconi Building**.

A cashier service is available next to the registration desk (with the same opening hours) for onsite registrations, payments, refunds and/or purchase of social events and technical tour tickets. Please note that only a limited number of tickets for additional events may be available.

For more information on fees, please visit the dedicated page on the Conference website <https://icors2024.org/registration/>.

- ✓ *In order to avoid crowds, we kindly recommend participants to obtain their accreditation from the earliest opening hours of the registration desk on July 28th or July 29th.*

General Information

OFFICIAL CONFERENCE LANGUAGE

The official language of the ICORS 2024 is **English**.

VOLUNTEERS AND INFORMATION DESK

A multilingual team of volunteers will welcome all ICORS 2024 conference delegates. They will be available for you at the Conference venue to help and assist you if you have any questions about the event. This team will be identifiable by their branded t-shirts and name tags.



CONFERENCE BADGES AND CERTIFICATES OF ATTENDANCE

At the registration desk, you will receive your Conference badge and kit when signing in. To access the venue, the coffee breaks and lunches and all social events, please make sure to wear your badge at all times while attending the Conference.

The registration fee for participants includes:

- Participation at the Conference
- Welcome Cocktail
- Coffee breaks, Tea breaks and Lunch

The registration fee for accompanying persons includes:

- Dedicated Tour
- Welcome Cocktail
- Social Dinner

General Information

Wi-Fi ACCESS

Eduroam is available inside all the University Campus. For those who cannot access Eduroam, we will distribute additional login credentials at the registration desk to connect via 'sapienza' and 'eduroam' Wi-Fi networks

ICORS 2024 CONFERENCE APP

You will find all information and updates regarding the Conference, the venue, the social events, the exhibitor list and more on the ICORS 2024 App that you can download on Android and iOS systems.

All programme updates will be available on the Conference App.

The app is available on Play Store and App Store. You can find it by digiting “Conference4me” and select “ICORS” from the home or scan the QR Code.



lug 28 - ago 2



International
Conference ...
Rome, Italy

PHOTOSHOOT AND RECORDINGS

When registering for the Conference and/or submitting an abstract (if applicable), the organisers were given permission to take photos and/or make recordings during the Conference for uploading on the ICORS 2024 website and social media (digital or printed channels).

If you would prefer not to be recorded or photographed for cultural or personal reasons, please contact the Conference Secretariat before **Tuesday, July 23th, 2024**.



GENERAL RECOMMENDATIONS

Please set your mobile phones to “silent” mode during all Conference sessions and presentations out of respect for the speakers.

We would request all attendees to ask respectful questions and avoid dominating presenter question time to further their own particular agendas. The question time that follows the talks is intended to give presenters the opportunity to expand on their subject in response to the audience’s questions and not a platform for members of the audience to reply individually.

Smoking is not permitted on the Conference premises.

Two charging stations for smartphones are available next to the registration desk.

NON-DISCRIMINATION AND SUSTAINABILITY POLICIES FOR ICORS 2024

ICORS 2024 will adopt the following safe space policy and implement numerous diversity and inclusivity initiatives as part of ongoing efforts to improve diversity and inclusivity at this Conference.

Specific Diversity and Inclusivity Initiatives:

- **ICORS 2024** has a safe space policy to foster an environment of respect, which makes all participants feel welcome – particularly those who have been historically marginalised or excluded, whether by religion, ethnicity, sex, gender or sexual orientation. Different opinions and diverse perspectives are crucial to proper discussions. All attendees must ultimately take responsibility for their own words and behaviour – in person and on social media – throughout the entire event and at associated social gatherings.
- **Sustainability:** An event is considered socially sustainable when it is designed, planned and implemented on the basis of a strategy that minimises its negative impact on the environment and leaves a positive legacy for the host community.

Attendees are encouraged to:

- Be mindful of and understand that intersectional and intercultural dialogue shapes our life experience.
- Actively include all attendees in social gatherings (such as post-conference dinners and social events), particularly those for whom English and Italian are not their first language, juniors and students.

CONFERENCE SUSTAINABILITY

Over the years Symposia has been implementing a large number of operational best practices in its daily operations and for all its events, from the selection of materials according to eco-sustainability criteria and the energy efficiency of the equipment to the procedures for coping with possible work peaks and for the replacement of absent staff.

ICORS 2024 will be an environmentally-friendly event promoting environmental and social solidarity.

Great importance will be given to environmental sustainability, food choices are taken in a conscious manner to avoid consumption of meat and waste.

Great care will be attached to our **green philosophy** that will be applied not only to the catering services but also in the choice of all equipment, materials and gadgets and via our endorsement of the **Food for Good project**.

- **Food waste:** Thanks to collaboration with Federcongressi & eventi, the food bank network Banco Alimentare and the Fair Event organisation Equoevento, we will be collecting any surplus food at the end of Conference meals and delivering it to charitable causes such as family homes, soup kitchens and refugee centres, in accordance with the hygiene regulations in force and in compliance with Italy’s Good Samaritan legislation (Law 155/2003).

General Information

- **Carbon neutral:** ICORS 2024 will be climate-friendly and, in the best case scenario, carbon neutral. As the Organisation Secretariat, Symposia keeps CO² emissions during its work to a minimum and seeks to avoid all CO² emissions arising from conference-related activities and travel. For this reason, on the website and in private correspondence with participants, ICORS 2024 staff will inform participants of the various possibilities for reaching the venue, such as public transport and bicycle lanes. ICORS 2024 will also prioritise renewable energy sources and eco-friendly merchandise in the conference kit.

TRAVEL & LOCAL TRANSPORT

You can find all the info regarding local transportation at the following link:

<https://icors2024.org/local-transportation/>

PRACTICAL INFORMATION

LOCAL TIME, WEATHER

The local time in Rome is CEST time. The weather in July-August is usually hot and sunny.

CURRENCY, EXCHANGE, CREDIT CARDS

The official currency is the Euro (€). You will find several exchange offices and banks in the airports and the city centre. Banks are generally open on workdays, generally between 9.00 AM and 4.00 PM. Before changing your money, we advise you to enquire about the rate of commission. You can also withdraw cash at ATMs.

ELECTRICITY SUPPLY

Power Connections & Voltage:

flat, two or three-pole,
round-pin European plugs, 220 V.



EMERGENCY NUMBER

With the EMERGENCY **112** service, all emergency or urgent phone calls (police, fire brigade and medical emergencies) are accessible through a single number, namely **112**. The service is online via internet and via mobile phones, for those requiring assistance in foreign languages.

LOST AND FOUND

In case of Lost and Found items, please refer to the Information and registration desk.

For lost property within the Rome metropolitan area, please call: + 390667693214

LIABILITY

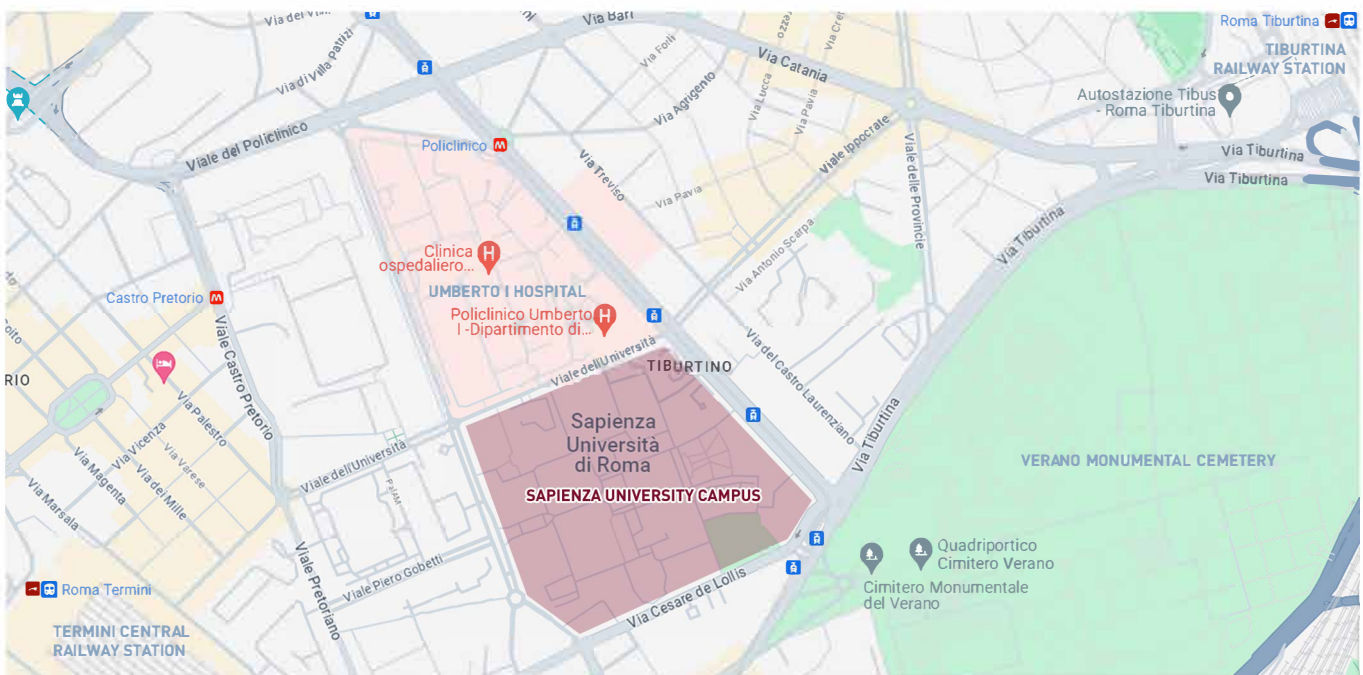
The organisers of ICORS 2024 assume no liability for damage or injury to persons or property in association with the conference and/or related events.



ROME SUBWAY MAP



SAPIENZA CAMPUS DISTRICT MAP



FINAL Technical Program as of July 26, 2024.

No further changes will be made in this pdf or online/on the app.

Monday 29 July

Opening Ceremony

Monday, 29/July/2024

Location: Aula Magna

8:45am - 9:00am

Plenary

Monday, 29/July/2024

Session Chair: Ara Apkarian

Location: Aula Magna

9:00am - 9:45am

What can we learn from half a century of surface-enhanced Raman spectroscopy: from nano- to AI-driven SERS?

Jun Yi, En-Ming You, Ren Hu, Zhong-Qun Tian

State Key Laboratory of Physical Chemistry of Solid Surfaces and College of Chemistry and Chemical Engineering, Xiamen University, Xiamen 361005, China

Electrochemical TERS

Monday, 29/July/2024

Session Chair: Bin Ren

Location: Aula Magna

10:15am - 10:45am

Nanoscale Study of Electrochemical Interfaces by Tip-enhanced Raman Spectroscopy

Yi-Fan Bao, Mengyuan Zhu, Hongxuan Chen, Tengxiang Huang, Xiang Wang, Bin Ren
Xiamen University, China

10:45am - 11:05am

Plasmon-Determined Selectivity in Photocatalytic Transformations on Gold and Gold-Palladium Nanostructures

Dzmitry Kurouski¹, Zhandong Li¹, Sadaf Ehtesabi², Siddhi Gojare², Martin Richter², Stephan Kupfer², Stefanie Gräfe²

¹Texas A&M university, United States of America; ²Institute of Physical Chemistry and Abbe Center of Photonics, Friedrich Schiller University Jena, Helmholtzweg 4, 07743 Jena, Germany

11:05am - 11:20am

Vibrational and electronic surface-enhanced Raman spectroscopy at electrochemical interfaces

Katsuyoshi Ikeda

Nagoya Institute of Technology, Japan

11:20am - 11:35am

Overcoming electron transfer rate limitations in cyclic voltammetry using Surface Enhanced Raman Spectroelectrochemistry – seeing at and on the electrode

C. Maurits De Roo, W.J. Niels Klement, Wesley R. Browne

University of Groningen, Netherlands, The

11:35am - 11:50am

Development of Tip-Enhanced Raman Spectroscopy in Controlled Electrolytes

Naihao Chiang

University of Houston, United States of America

Theory and Computation: Modeling SERS and TERS I

Monday, 29/July/2024

Session Chair: Lasse Jensen

Location: Cabibbo (Fermi)

10:15am - 10:45am

Modeling Atomistic Near-Field Spectroscopy

Lasse Jensen

The Pennsylvania State University, United States of America

10:45am - 11:05am

Fully Atomistic Multiscale Modeling of Raman, SERS and Raman Optical Activity

Chiara Cappelli

Scuola Normale Superiore, Italy

11:05am - 11:25am

Theory of Momentum-Based Nano-optics

Sai Duan

Fudan University, China, People's Republic of

11:25am - 11:40am

Hybrid Quantum/Classical Multiscale Modeling of Surface-Enhanced Raman Scattering

Piero Lafiosca¹, Luca Nicoli¹, Tommaso Giovannini¹, Stefano Corni², Chiara Cappelli¹

¹Scuola Normale Superiore, Piazza dei Cavalieri 7, 56126 Pisa, Italy; ²Dipartimento di Scienze Chimiche, Università di Padova, via Marzolo 1, 35131 Padova, Italy

Biomedical Applications of Coherent Raman Imaging I

Monday, 29/July/2024

Session Chair: Ji-xin Cheng

Location: Ginestra (Chemistry)

10:15am - 10:45am

Stimulated Raman Photothermal Microscopy: Bond-selective imaging with ultrahigh sensitivity and ease of operation

Ji-xin Cheng

Boston University, United States of America

10:45am - 11:05am

Fundamental insights into the human gut microbiome obtained by correlative SRS imaging and fluorescence microscopy

Arno Schintlmeister

University of Vienna, Austria

11:05am - 11:20am

Identifying Tumor-Associated Macrophage Polarization with Label-free Multimodal Nonlinear Optical Microscopy

Francesco Manetti¹, Benedetta Gavazzoni¹, Marco Ventura², Arianna Bresci¹, Salvatore Sorrentino¹, Andrea Rabolini¹, Chiara Ceconello¹, Giulio Cerullo^{1,2}, Manuela Teresa Raimondi³, Renzo Vanna², Emanuela Jacchetti³, Dario Polli^{1,2}

¹Department of Physics, Politecnico di Milano, P.zza L. da Vinci 32, 20133 Milan, Italy; ²CNR Institute for photonics and nanotechnologies (IFN), P.zza L. da Vinci 32, 20133 Milan, Italy; ³Department of Chemistry, Politecnico di Milano, P.zza L. da Vinci 32, 20133 Milan, Italy

11:20am - 11:35am

Identification of molecular signatures for diseases by vibrational spectroscopic imaging

Hyeon Jeong Lee, Delong Zhang

Zhejiang University, China, People's Republic of

11:35am - 11:50am

Spontaneous and coherent Raman microscopy-based evaluation of erythroid differentiation and heme biosynthesis

Adriana Adamczyk¹, Olga Mazuryk¹, Katarzyna Majzner¹, Malgorzata Baranska^{1,2}

¹Jagiellonian University in Krakow, Faculty of Chemistry, Poland; ²Jagiellonian University in Krakow, Jagiellonian Centre for Experimental Therapeutics, Poland

Novel Approaches: Nanocavity and Quantum Correlations

Monday, 29/July/2024

Session Chair: CHRISTOPHE GALLAND

Location: Conversi (Marconi)

10:15am - 10:45am

Molecular Optomechanics with Plasmonic Nanocavities and Quantum Effects in Spontaneous Raman Scattering

CHRISTOPHE GALLAND

EPFL, Switzerland

10:45am - 11:05am

Sum-frequency vibrational spectroscopy with tip-enhanced nanocavities

Philippe Roelli¹, Isabel Pascual², Javier Aizpurua², Rainer Hillenbrand¹

¹CIC nanoGUNE, San Sebastián, Spain; ²Center for Material Physics, San Sebastián, Spain

11:05am - 11:25am

Convergence of Optical and Electron Microscopy: TERS in the atomistic near-field

Ara Apkarian¹, Joonhee Lee², Benjamin Taber³

¹University of California, Irvine, United States of America; ²University of Nevada, Reno, United States of America; ³Qorvo Inc., Bend, Oregon, United States of America

Security and Forensics

Monday, 29/July/2024

Session Chair: **Igor Lednev**

Location: **Aula 3 (Fermi)**

10:15am - 10:45am

Raman Spectroscopy for Forensic Purposes: The First Universal Method for the Identification of All Main Body Fluids

Igor Lednev

University at Albany, State University of New York, United States of America

10:45am - 11:00am

"Revolutionizing Anti-Counterfeiting Strategies: 3D Printed Raman Ink Labels for Enhanced Security and Traceability"

Wei Zhu

Wuhan Textile University, China, People's Republic of

11:00am - 11:15am

Relative quantification of titanium dioxide polymorphs in binary mixtures by Raman spectroscopy: interlaboratory comparison and foodstuff applications

Alessio Sacco¹, Marta Fadda¹, Anna Lisa Gilioli^{1,2}, Andrea Mario Giovannozzi¹, Ettore Vittone², Andrea Mario Rossi¹

¹Quantum Metrology and Nanotechnology Department, Istituto Nazionale di Ricerca Metrologica, Strada delle Cacce 91, 10135 Torino, Italy; ²Physics Department, Università degli Studi di Torino, Via Pietro Giuria 1, 10125 Torino, Italy

11:15am - 11:30am

Data analysis of low signal to noise Raman spectra for detecting traces of explosives on surfaces

Lisa Dreier, Anja Köhntopp, Arne Walter, Christoph Kölbl, Frank Duschek

German Aerospace Center, Germany

Biosensing I

Monday, 29/July/2024

Session Chair: **Young Mee Jung**

Location: **Amaldi (Marconi)**

10:15am - 10:45am

Detection of Exosomes for Cancer Diagnosis and Monitoring

Young Mee Jung

Kangwon National University, Korea, Republic of (South Korea)

10:45am - 11:05am

Real-time In Vivo Monitoring of Multiple Signaling Molecules in Plants by SERS

Dae-Hong Jeong

Seoul National University, Korea, Republic of (South Korea)

11:05am - 11:25am

multimodal raman biosensors for in vivo and liquid biopsy applications

Francesco Pavone

University of Florence, Italy

Quasiparticles

Monday, 29/July/2024

Session Chair: **Ken Burch**

Location: **Aula A (Chemistry)**

10:15am - 10:35am

Detecting A New Quasi-Particle With Raman Spectroscopy

Kenneth S. Burch

Department of Physics, Boston College, USA

10:35am - 10:50am

Spin rotational excitations in hexagonal RMnO₃ (R=Lu, Y)

Seung Kim¹, Sang-Wook Cheong², In-Sang Yang¹

¹Department of Physics, Ewha Womans University, Korea, Republic of (South Korea); ²Rutgers Center for Emergent Materials and Department of Physics and Astronomy, Rutgers University, USA

10:50am - 11:05am

Polarization-sensitive B-CARS hyperspectral imaging of ferroelectric domain walls

Robin Buschbeck¹, Naomi Fugal¹, Lukas König¹, Franz Hempel¹, Cherrie Lee², Carlota Canalias², Michael Rüsing^{1,3}, Susanne C. Kehr¹, Lukas M. Eng^{1,4}

¹Institute of Applied Physics, TU Dresden, 01187 Dresden, Germany; ²Department of Applied Physics, KTH Royal Institute of Technology, 10691 Stockholm, Sweden; ³Paderborn University, Integrated Quantum Optics, Institute for Photonic Quantum Systems (PhoQS), 33098 Paderborn, Germany; ⁴ct.qmat: Dresden-Würzburg Cluster of Excellence, TU Dresden, 01062 Dresden, Germany

11:05am - 11:20am

Pressure-Induced Topological and Structural Phase Transitions in 3D Topological Insulator TlBiTe₂

Anjana Joseph¹, Raagya Arora¹, Ashutosh Kumar Singh¹, Janaky Sunil¹, Irshad K.A.², Bobby Joseph², Sebastian C Peter², Umesh Waghmare², Rajaji Vincent³, Chandrabhas Narayana¹

¹Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India; ²Elettra Sincrotrone, Trieste, Italy; ³Institute of Mineralogy, Materials Physics and Cosmochemistry, Sorbonne University, Paris, France

Planetary Explorations I

Monday, 29/July/2024

Session Chair: **Samuel Clegg**

Location: **Aula 4 (Fermi)**

10:15am - 10:35am

Planetary Mineralogical Investigation by Raman Spectroscopy

Samuel Clegg¹, Shiv Sharma², Roger Wiens³

¹Los Alamos National Laboratory, United States of America; ²University of Hawaii, United States of America; ³Purdue University, United States of America

10:35am - 10:50am

Surface Enhanced Raman Spectroscopy for the Detection of Biosignatures on Icy Worlds and Martian Polar Caps

Aria Vitkova, James Lambert, Tuan Vu

Jet Propulsion Laboratory/California Institute of Technology, United States of America

10:50am - 11:05am

Coherent Phonon Spectroscopy: an emerging alternative to Raman Spectroscopy in Space Exploration?

Michael Gensch

TU Berlin, Germany

11:05am - 11:20am

Analysis of space weathering using correlation of luminescence and Raman signatures for silicate mineral mixes

Sergey G. Pavlov¹, Iris Weber², Ute Böttger¹, Maximilian P. Reitze²

¹Institute of Optical Sensor Systems, German Aerospace Center, Berlin, Germany; ²Institut für Planetologie, Universität Münster, Münster, Germany

Atomistic TERS I

Monday, 29/July/2024

Session Chair: Zhen-Chao Dong

Location: Aula Magna

12:00pm - 12:30pm

Beyond Single-Molecule Tip-Enhanced Raman Spectroscopy

Zhen-Chao Dong

University of Science and Technology of China, China

12:30pm - 12:50pm

Mechanistic Understanding of Catalytic Reactions using Tip-Enhanced Raman Spectroscopy

Naresh Kumar

ETH Zurich, Switzerland

12:50pm - 1:05pm

Different Enhancement of Individual Modes in TERS depending on the tip and tip-sample distance

Tim Parker, Felix Schneider, Yang Zhao, Eric Juriatti, Philipp Haizmann, Thomas Chassé, Heiko Peissert, Alfred J Meixner, Dai Zhang

Eberhard Karls Universität Tübingen, Germany

Theory and Computation: Modeling SERS and TERS II

Monday, 29/July/2024

Session Chair: Stephan Kupfer

Location: Cabibbo (Fermi)

12:00pm - 12:30pm

Quantum Mechanical Modelling of Plasmon-enhanced Raman Spectroscopy

Kevin Fiederling, Stefanie Gräfe, Stephan Kupfer

Friedrich Schiller University Jena, Germany

12:30pm - 12:50pm

Real-time, real-space TDDFT for near-field Raman spectroscopy with a multipolar Hamiltonian

Takeshi Iwasa^{1,2}

¹Department of Chemistry, Faculty of Science, Hokkaido University, Sapporo, Japan; ²JST-PRESTO, Saitama, Japan

12:50pm - 1:05pm

Experimental and theoretical characterization of 1,3-Diphenyl-3-tosylpropan-1-one

Srishailam Kanugula¹, Sunil kumar V², Balakrishnac A³, Ramana Rao G⁴

¹Department of Physics, School of Sciences and Humanities, SR University, Warangal-506371, Telangana, India; ²Department of Biotechnology, School of Bioengineering, SRM Institute of Science and Technology, Kattankulathur-603203, Tamilnadu, India; ³Department of Chemistry, Indian Institute of Technology, Roorkee-247667, Uttarakhand, India; ⁴Department of Physics, Kakatiya University, Warangal-506009, Telangana, India.

1:05pm - 1:20pm

Automated, turnkey infrared and Raman spectra from first-principles

Lorenzo Bastonero¹, Nicola Marzari^{1,2,3}

¹U Bremen Excellence Chair, Bremen Center for Computational Materials Science, and MAPEX Center for Materials and Processes, University of Bremen, D-28359 Bremen, Germany; ²Theory and Simulations of Materials (THEOS) and National Center for Computational Design and Discovery of Novel Materials (MARVEL), ³Ecole Polytechnique Fédérale de Lausanne, Lausanne, CH-1015, Switzerland; ⁴Laboratory for Materials Simulations, Paul Scherrer Institut, 5232 Villigen PSI, Switzerland

Biomedical Applications of Coherent Raman Imaging II

Monday, 29/July/2024

Session Chair: Shuhua Yue

Location: Ginestra (Chemistry)

12:00pm - 12:20pm

Lipid metabolic profiling via quantitative stimulated Raman scattering imaging opens up new avenues for precision

medicine

Shuhua Yue

Beihang University, People's Republic of China

12:20pm - 12:40pm

Exploring Skin Physiology and Pharmacology through CARS Microscopy

Jonathan Brewer

University of Southern Denmark, Denmark

12:40pm - 12:55pm

Pre-resonance Raman and SRS for detecting carotenoids; applicability to Alzheimer Disease brain tissue samples

Freek Ariese¹, Liron Zada¹, Loes Ettema¹, Jinke van der Sluis¹, Ben Lochocki²

¹Vrije Universiteit Amsterdam, Netherlands, The; ²ARCNL, Amsterdam, Netherlands

12:55pm - 1:10pm

AI-driven endomicroscopic morphochemical imaging for tumor identification and fs-laser ablation for selective tissue removal

Matteo Calvarese¹, Elena Corbetta^{1,2}, Jhonatan Contreras^{1,2}, Hyeonsoo Bae², Chenting Lai³, Karl Reichwald³, Tobias Meyer-Zedler^{1,2}, David Pertzborn⁴, Anna Muehlig⁴, Bernhard Messerschmidt³, Orlando Guntinas-Lichius⁴, Micheal Schmitt², Thomas Bocklitz^{1,2}, Juergen Popp^{1,2}

¹Leibniz Institute of Photonic Technology, Jena; ²Institute of Physical Chemistry and Abbe Center of Photonics, Friedrich Schiller University, Jena; ³GRINTECH GmbH, Otto-Eppenstein-Str. 7, Jena; ⁴Department of Otorhinolaryngology Jena University Hospital, Jena

Novel Approaches: Artificial Intelligence I

Monday, 29/July/2024

Session Chair: Jean-Francois Masson

Location: Conversi (Marconi)

12:00pm - 12:30pm

Machine learning tools for SERS sensing and synthesis of nanoparticles

Jean-Francois Masson^{1,2}, Malama Chisanga¹, Hannah Williams¹, Saba Bashir¹, Jason Malenfant¹

¹Universite de Montreal, Canada; ²Institut Courtois

12:30pm - 12:50pm

SERS Sensing Applied to Drug Discovery

Luis M. Liz-Marzan

CIC biomaGUNE, Spain

12:50pm - 1:05pm

Deep learning assisted real time field of view optimization in stimulated Raman histology for brain tumor detection.

Lazaro Javier de Leon¹, Youssef Ahmad¹, Rémi André¹, Julien Wojak¹, Romain Appay², Hervé Rigneault¹

¹Aix Marseille Univ, CNRS, Centrale Med, Institut Fresnel, Marseille, France; ²APHM, INP, Inst Neurophysiopathol, CHU Timone, Service d'Anatomie Pathologique et de Neuropathologie, Marseille, France

1:05pm - 1:20pm

Transfer Learning Techniques for Raman Spectra Classification Using Artificial Training Data

Jawad Kamran^{1,2}, Julian Hniopek^{1,2}, Thomas W Bocklitz^{1,2}

¹Leibniz Institute of Photonic Technology (IPHT), Albert Einstein Strasse 9, 07745 Jena, Germany; ²Institute of Physical Chemistry (IPC) and Abbe Center of Photonics (ACP), Friedrich Schiller University Jena, Member of the Leibniz Centre for Photonics in Infection Research (LPI), Helmholtzweg 4, 07743 Jena, Germany

Archaeometry and Conservation Sciences

Monday, 29/July/2024

Session Chair: Ludovic Bellot-Gurlet

Location: Aula 3 (Fermi)

12:00pm - 12:30pm

Raman spectroscopy for the study of ancient materials and objects: from the laboratory to sites

Ludovic Bellot-Gurlet

Sorbonne Université, CNRS, de la Molécule aux Nano-objets : Réactivité, Interactions et Spectroscopies - MONARIS, Paris (France)

12:30pm - 12:50pm

Corrosion, the most worrying issue for curators: Raman spectroscopy applied to the study of metals

Julene Aramendia, Kepa Castro, Juan Manuel Madariaga
University of the Basque Country

12:50pm - 1:10pm

Direct Point Analysis and 2D-Mapping on Easel Paintings from the National Gallery-Alexandros Soutsos Museum (ATH, GR)

Anastasia Rousaki^{1,2}, Sara Valadas³, Silvia Bottura-Scardina^{3,4}, Eva Vermeersch², Sylvia Lycke^{2,5}, Anna Moutsatsou⁶, Andrew J. King⁷, António Candeias³, Peter Vandenberghe^{2,5}, Eleni Kouloumpi⁶

¹Institute of Nanoscience and Nanotechnology, National Centre for Scientific Research "Demokritos" Patr. Grigoriou E' & 27 Neapoleos Str. 15341, Ag. Paraskevi, Greece; ²Department of Chemistry, Ghent University, Campus Sterre, S12, Krijgslaan 281, B-9000, Ghent, Belgium; ³HERCULES Laboratory, City University of Macau Chair in Sustainable Heritage and Institute for Advanced Studies and Research, University of Évora, Évora, Portugal; ⁴Department of Conservation & Built Heritage, L-Università ta' Malta; ⁵Department of Archaeology, Ghent University, Campus Ufo, Sint-Pietersnieuwstraat 35, B-9000, Ghent, Belgium; ⁶Laboratory of Physicochemical Research, Conservation Department of the National Gallery, The National Gallery-Alexandros Soutsos Museum, 1 Michalacopoulou Street, 11634, Athens, Greece; ⁷Spectroscopy Products Division, Renishaw plc, New Mills, Wotton-under-Edge, Gloucestershire GL12 8JR, United Kingdom

Biology and Biomedicine: Chemometrics, Data Science, and AI I

Monday, 29/July/2024

Session Chair: Thomas Bocklitz

Location: Amaldi (Marconi)

12:00pm - 12:30pm

Photonic Data Science: Challenges and Opportunities in Raman Spectral Analysis

Thomas Bocklitz^{1,2,3}

¹Leibniz-IPHT, Jena, Germany; ²University of Jena, Jena, Germany; ³University of Bayreuth, Bayreuth, Germany

12:30pm - 12:50pm

On-the-Fly Raman Microscopy Guaranteeing the Accuracy of Discrimination

Tamiki Komatsuzaki^{1,2}

¹Hokkaido University, Japan; ²Osaka University, Japan

12:50pm - 1:05pm

A Deep Learning Assisted Identification of Single-Molecule Peptide Post Translational Modification using Plasmonic Nanopore Surface-Enhanced Raman Spectroscopy (SERS)

Mulusew W. Yaltave¹, Yingqi Zhao¹, Eva Bozo¹, Peilin Xin¹, Vahid Farrahi^{1,2}, Francesco De Angelis³, Jian-An Huang¹

¹University of Oulu, Finland; ²Institute for Sport and Sport Science, TU Dortmund University, Dortmund, Germany; ³Istituto Italiano di Tecnologia, Via Morego 30, 16163, Genoa, Italy

1:05pm - 1:20pm

Towards a combined Surface-enhanced Raman scattering, Seed amplification assay and Machine Learning approach facilitating Alzheimer's disease diagnosis

Cristiano D'Andrea¹, Federico Angelo Cazzaniga², Andrea Barucci¹, Marella de Angelis¹, Martina Banchelli¹, Panagis Polykretis¹, Giulia Ciacci¹, Chiara Marzi^{1,3}, Antonio Indaco², Pietro Tiraboschi², Giorgio Giaccone², Paolo Matteini¹, Fabio Moda²

¹Institute of Applied Physics "Nello Carrara" (IFAC), National Research Council (CNR), Italy; ²Division of Neurology 5 and Neuropathology, Fondazione IRCCS Istituto Neurologico Carlo Besta, Italy; ³Department of Statistics, Computer Science and Applications "Giuseppe Parenti", University of Florence, Italy

Materials I

Monday, 29/July/2024

Session Chair: Philippe Roelli

Location: Aula A (Chemistry)

12:00pm - 12:15pm

From copper surface synchrotron studies to deep UV-SERS applications

Martynas Talaikis¹, Shivani Yadav², Yury Ryabchikov³, Tomasz Sobol⁴, Poting Liu², Tanja Deckert-Gaudig², Gediminas Niaura¹, Vladimir Sivakov¹

¹Center for Physical Sciences and Technology, Vilnius/Lithuania; ²Leibniz Institute of Photonic Technology, Jena/Germany; ³HiLASE Centre Institute of Physics of the Czech Academy of Sciences, Dolni Brezany/Czech Republic; ⁴National Synchrotron Radiation Centre SOLARIS, Kraków/Poland

12:15pm - 12:30pm

Phonon anharmonicity in confined carbyne probed by Raman spectroscopy

Pietro Marabotti¹, Johannes Lechner¹, Lei Shi², Thomas Pichler³, Sebastian Heeg¹

¹Institut für Physik und IRIS Adlershof, Humboldt Universität zu Berlin, Berlin; ²School of Materials Science and Engineering, Sun Yat-sen University, Guangzhou; ³Fakultät für Physik, Universität Wien, Wien

12:30pm - 12:45pm

High pressure Raman study of dipeptide glycyl-L-phenylalanine

J. Avelar S. Silva¹, Raphaela A. Lima¹, Adrya Jakellyne P. Cordeiro¹, Daniel Linhares M. Vasconcelos², Paulo de Tarso Cavalcante Freire¹

¹Universidade Federal do Ceará, Brazil; ²Universidade Estadual do Ceará, Brazil

12:45pm - 1:00pm

Plant nanobionic sensor based trace VOC detection

Yun Sik Choi, Won ki Son, Dae Hong Jeong

Seoul National University, Korea, Republic of (South Korea)

Planetary Explorations II

Monday, 29/July/2024

Session Chair: SHIV Sharma

Location: Aula 4 (Fermi)

12:00pm - 12:30pm

Raman Instrumentation for Planetary Exploration

SHIV Kumar Sharma¹, Stanley Michael Angel²

¹University of Hawaii at Manoa, Honolulu, HI, USA; ²University of South Carolina, Columbia, SC, USA

12:30pm - 12:50pm

Raman Laser Spectroscopy in Planetary Exploration: A historical perspective

Fernando Rull¹, Andoni Moral², Guillermo Lopez-Reyes¹, Jose Antonio Manrique¹, Olga Prieto-Ballesteros³, Tomás Belenguer², Ian Hutchinson⁴, Sylvestre Maurice⁵

¹University of Valladolid, Spain; ²INTA, Spain; ³Astrobiology Center, Spain; ⁴University of Leicester; ⁵IRAP-Toulouse, France

12:50pm - 1:05pm

1000 Sols of Supercam Raman Activities On Mars – Review Of Data Processing And Mineral Detections At The Jezero Crater

Guillermo Lopez-Reyes¹, Elise Clave², Jose Antonio Manrique-Martinez¹, Ann Ollila³, Olivier Beyssac⁴, Marion Nachon⁵, Marco Veneranda¹, Erwin Dehouck⁶, Kepa Castro⁷, Juan Manuel Madariaga Mota⁷, Paolo Pilleri⁸, Shiv K. Sharma⁹, Suzanne Schröder², Sylvain Bernard⁴, Jade Comellas⁹, Evan Kelly⁹, Sam Clegg³, Sofía Julve-Gonzalez¹, Ivan Reyes-Rodriguez¹, Olivier Forni⁸, Tayro Acosta⁹, Fernando Rull¹, Sylvestre Maurice⁸, Olivier Gasnault⁸, Agnes Cousin⁸, Roger C. Wiens¹⁰

¹ERICA Research Group, Universidad de Valladolid, Spain; ²DLR-OS, Germany; ³LANL, USA; ⁴IMPMC, CNRS, France; ⁵Texas A&M University, USA; ⁶LGL-TPE, Université de Lyon, France; ⁷UPV/EHU, Spain; ⁸IRAP, France; ⁹University of Hawaii, USA; ¹⁰Purdue University, USA

Plenary

Monday, 29/July/2024

Session Chair: Larry Ziegler

Location: Aula Magna

2:15pm - 3:00pm

Molecular optomechanical approach to Surface-Enhanced Raman Scattering

Javier Aizpurua

DIPC, Spain

Atomistic TERS II

Monday, 29/July/2024

Session Chair: Nan Jiang

Location: Aula Magna

3:15pm - 3:45pm

Probing Chemistry at the Ångström-Scale via Tip-Enhanced Raman Spectroscopy

Nan Jiang

University of Illinois Chicago, United States of America

3:45pm - 4:05pm

Imaging Electronic and Atomic Motion in Molecules

Manish Garg

Max Planck Institute for Solid State Research, Germany

4:05pm - 4:25pm

Atomically resolved tip-enhanced Raman scattering imaging of chemisorbed molecules

Joonhee Lee¹, V. Ara Apkarian²

¹University of Nevada, Reno, United States of America; ²University of California, Irvine, United States of America

4:25pm - 4:45pm

Towards Single-Molecule Sequencing: Resolving Single Nucleobases in a Single-Stranded DNA by using TERS

Yao Zhang, Zhen-Chao Dong

Hefei National Research Center for Physical Sciences at the Microscale and CAS Center for Excellence in Quantum Information and Quantum Physics, University of Science and Technology of China; Hefei, Anhui 230026, China

Theory and Computation: Fundamentals of SERS

Monday, 29/July/2024

Session Chair: Ruben Esteban

Location: Cabibbo (Fermi)

3:15pm - 3:45pm

Nonlinear and collective effects in Surface Enhanced Raman Spectroscopy

Ruben Esteban^{1,2}

¹Centro de Física de Materiales, Centro Mixto CSIC-UPV/EHU, Spain; ²Donostia International Physics Center

3:45pm - 4:05pm

Chemical and orientation contributions to the SERS enhancement factor of resonant molecules

Eric C. Le Ru^{1,2}, Baptiste Auguie^{1,2}

¹Victoria University Wellington, New Zealand; ²The MacDiarmid Institute for advanced materials and nanotechnology

4:05pm - 4:25pm

Plasmon-Enhanced Ultrafast and CW Raman Spectroscopies: A Unified Theoretical Description and Comparison with Experiments

Larry Ziegler

Boston University, United States of America

4:25pm - 4:40pm

Molecular Modeling of (Resonance)-Raman spectroscopy of Large Systems

Sara Gomez, Piero Lafiosca, Tommaso Giovannini, Chiara Cappelli
Scuola Normale Superiore di Pisa, Italy

Coherent Raman Imaging I

Monday, 29/July/2024

Session Chair: Dario Polli

Location: Ginestra (Chemistry)

3:15pm - 3:45pm

Ultrafast Coherent anti-Stokes Raman Scattering Microscopy for Biological Applications and Material Science

Federico Vernuccio¹, Chiara Ceconello¹, Arianna Bresci¹, Francesco Manetti¹, Salvatore Sorrentino¹, Renzo Vanna², Giulio Cerullo^{1,2}, Dario Polli^{1,2}

¹Politecnico di Milano, Italy; ²CNR-IFN

3:45pm - 4:05pm

Stimulated Raman Scattering Imaging: the Next Frontier of Light Microscopy

Wei Min

Columbia University, US, United States of America

4:05pm - 4:25pm

Superresolved CARS imaging by coherent image scanning

Anna Zhitnitsky, Elad Benjamin, Dan Oron

Weizmann Institute, Israel

4:25pm - 4:40pm

A Versatile Laser System for Wide-field Nonlinear Optical Microscopy

Federico Vernuccio¹, Assia Benachir¹, Eric Michele Fantuzzi¹, Sandro Heuke¹, Benoit Morel², Simone Bux², Nicolas Thiré², Hervé Rigneault¹

¹Aix Marseille Univ, CNRS, Centrale Med, Institut Fresnel, Marseille, France; ²Fastlite, 165 route des Cistes, 06600 Antibes, France

Novel Approaches: Artificial Intelligence II

Monday, 29/July/2024

Session Chair: Siva Umamathy

Location: Conversi (Marconi)

3:15pm - 3:45pm

Impact of Artificial Intelligence and Resonance Raman Spectroscopy in Biomedicine

Siva Umamathy

Indian Institute of Science, India

3:45pm - 4:05pm

Systematic and efficient sample preparation and machine learning pipelines towards clinical translation of Raman spectroscopy

Loza Tadesse

MIT, United States of America

4:05pm - 4:20pm

Machine Learning of Raman Spectroscopic Data: A Systematic Comparison of Validation Strategies

Daniel Zimmermann, Lukas Steininger, Katerina Prohaska, Birgit Herbinger, David Lilek

FHWN Biotech Campus Tulln, Austria

4:20pm - 4:35pm

Deep Learning Transformations in Raman Spectroscopy: From Fundamental Principles to Innovative Applications

Francesco Pappone¹, Federico Califano²

¹Parco Scientifico Tecnologico Technoscience; ²Sapienza Università di Roma

Art I

Monday, 29/July/2024

Session Chair: Marco Leona

Location: Aula 3 (Fermi)

3:15pm - 3:45pm

Revisiting silver nanoisland films (AgNIFs) as substrates for SERS analysis of organic colorants in works of art

Marco Leona¹, Omari Kirkland², John R. Lombardi²

¹The Metropolitan Museum of Art, New York, NY, United States of America; ²The City University of New York - City College, New York, NY, United States of America

3:45pm - 4:05pm

New integrated approaches in Heritage Science: correlative Brillouin and Raman microspectroscopy - BRaMS

Francesca Rosi¹, Martina Alunni Cardinali², Irene Bargagli¹, Laura Cartechini¹, Marco Paolantoni², Luciano Buemi Pensabene³, Daniele Fioretto⁴, Valeria Di Tullio⁵, Noemi Proietti⁵, Costanza Miliani⁶, Lucia Comez⁷

¹CNR-SCITEC Perugia, Italy; ²Dipartimento di Chimica Biologica e Biotecnologie Università di Perugia, Italy; ³Peggy Guggenheim Collection Dorsoduro, Venezia, Italy; ⁴Dipartimento di Fisica e Geologia Università di Perugia; ⁵CNR-ISPC Roma, Italy; ⁶CNR-ISPC Napoli, Italy; ⁷CNR-IOM Perugia, Italy

4:05pm - 4:25pm

Deep Raman for Heritage Science: state of the art

Claudia Conti¹, Alessandra Botteon¹, Alberto Lux¹, Marco Realini¹, Pietro Strobbia², Sara Mosca³, Pavel Matousek³

¹Institute of Heritage Science, National Research Council, Via Cozzi 53, Milano 20125, Italy; ²Department of Chemistry, University of Cincinnati, 312 College Dr, Cincinnati, United States; ³Central Laser Facility, Research Complex at Harwell, STFC Rutherford Appleton Laboratory, Harwell Oxford, OX11 0QX, United Kingdom.

4:25pm - 4:40pm

Characterization of carbonate high-pressure phases with Raman spectroscopy

Lkhamsuren Bayarjargal¹, Dominik Spahr¹, Victor Milman², Björn Winkler¹

¹Goethe University Frankfurt, Institute of Geosciences, Germany; ²Dassault Systèmes BIOVIA, Cambridge CB4 0WN, United Kingdom

Biology and Biomedicine: Chemometrics, Data Science, and AI II

Monday, 29/July/2024

Session Chair: Aidan D. Meade

Location: Amaldi (Marconi)

3:15pm - 3:35pm

Predictive analytics with Raman spectroscopy – progress towards development of assays for oncological applications

Aidan D. Meade, Fiona M. Lyng

Technological University Dublin, Ireland

3:35pm - 3:55pm

Accelerating confocal Raman microscopy by capturing essential spectral information

Cyril Ruckebusch, Laureen Coic, Raffaele Vitale

LASIRE CNRS U LILLE, France

3:55pm - 4:10pm

Robust Spectroscopic Analysis through Image-Based Spectral Representation and Deep Learning Techniques

Azadeh Mokari^{1,2}, Oleg Ryabchikov^{1,2}, Thomas Bocklitz^{1,2}

¹Leibniz Institute of Photonic Technology, Member of Leibniz Health Technologies, Member of the Leibniz Centre for Photonics in Infection Research (LPI), Albert-Einstein-Strasse 9, 07745 Jena, Germany; ²Institute of Physical Chemistry, Friedrich Schiller University Jena, 07743 Jena, Germany

4:10pm - 4:25pm

IRRSmetrics4stem: a new tool for prediction of consecutive stages of Adipose-Derived Mesenchymal Stem Cells differentiation

Karolina Augustyniak^{1,2}, Monika Lesniak³, Hubert Latka¹, Miriam Unger⁴, Maciej P. Golan⁵, Jacek Z. Kubiak^{3,6}, Robert Zdanowski³, Kamilla Malek¹

¹Jagiellonian University, Faculty of Chemistry, Krakow, Poland; ²Jagiellonian University, Doctoral School of Exact and Natural Sciences, Krakow, Poland; ³Military Institute of Medicine – National Research Institute, Laboratory of Molecular Oncology and Innovative Therapies, Warsaw, Poland; ⁴Photothermal Spectroscopy Corp.; ⁵The Maria Grzegorzewska University, Institute of Psychology, Warsaw, Poland; ⁶University of Rennes, Institute of Genetics and Development of Rennes (IGDR), Rennes, France

4:25pm - 4:40pm

Raman spectroscopy and self-supervised learning: an approach to a general analysis method

Mathias N. Jensen¹, Eduarda M. Guerreiro², Agustin Enciso-Martinez³, Sergei G. Kruglik⁴, Cees Otto⁵, Omri Snir², Benjamin Ricaud¹, Olav Gaute Hellesø¹

¹Department of Physics and Technology, UiT The Arctic University of Norway, Tromsø, Norway; ²Department of Clinical Medicine, UiT The Arctic University of Norway, Tromsø, Norway; ³Oncode Institute and Ten Dijke/Chemical Signaling Laboratory, Department of Cell and Chemical Biology, Leiden University Medical Center, Leiden, The Netherlands; ⁴CNRS, Institut de Biologie Paris-Seine, Laboratoire Jean Perrin, Sorbonne University, Paris France; ⁵Department of Medical Cell BioPhysics, TechMed Centre, University of Twente, Enschede, The Netherlands

Materials: Soft Matter

Monday, 29/July/2024

Session Chair: Eric Potma

Location: Aula A (Chemistry)

3:15pm - 3:30pm

SERS and DFT study of rare earth-citrate complexes

Hao Jin¹, Tamitake Itoh², Yuko S. Yamamoto¹

¹Japan Advanced Institute of Science and Technology, Japan; ²National Institute of Advanced Industrial Science and Technology, Japan

3:30pm - 3:45pm

Temperature dependent structural evolution of PCE11

Eirini Lariou, Anna Kyrris, Sophia Charalambous Hayes

University of Cyprus, Cyprus

3:45pm - 4:00pm

Visible and UV-Resonance Raman spectroscopy to probe peptide supramolecular assemblies in sol, crystals, and gels

Silvia Marchesan¹, Barbara Rossi², Maurizio Polentarutti², Erica Scarel¹, Ottavia Bellotto¹, Simone Adorinni¹, Giovanni Pierri³, Consiglia Tedesco³, Slavko Kralj⁴, Attilio Vargiu⁵

¹University of Trieste, Italy; ²Elettra-sincrotrone Trieste S.C.p.A., Italy; ³University of Salerno, Italy; ⁴Jozef Stefan Institute, Slovenia; ⁵University of Cagliari, Italy

4:00pm - 4:15pm

Charge-transfer/polarization effects in the IR and Raman spectra of advanced π -conjugated materials

Matteo Tommasini¹, Daniele Fazzi², Carlo Saporiti¹, Luigi Brambilla¹, Chiara Castiglioni¹

¹Politecnico di Milano, Italy; ²Università di Bologna, Italy

4:15pm - 4:30pm

Exploring the formation of Poly(3-heythiophene) aggregates and interchain interactions using Raman spectroscopy

Jhon Rewlyson Torres Reis¹, Ruan Lucas Sousa Lima¹, Sanclayton Geraldo Carneiro Moreira¹, Waldecir Paraguassu¹, Paulo Trindade Araujo², Newton Martins Barbosa Neto¹

¹Institute of Natural Sciences, Federal University of Pará, Brazil; ²Department of Physics and Astronomy, The University of Alabama, USA

4:30pm - 4:45pm

Vibrational microspectroscopy of collagen fibers

Yryx Luna Palacios, Salile Khandani, Eric Potma

University of California, Irvine, United States of America

Planetary Explorations III

Monday, 29/July/2024

Session Chair: Rohit Bhartia

Location: Aula 4 (Fermi)

3:15pm - 3:35pm

Deep UV Raman Spectroscopy, from Earth to Mars and Back Again

Rohit Bhartia¹, William Hug¹, Ray Reid¹, Kyle Uckert², Michelle Miniti³, Sunanda Sharma², Andrew Steele⁴

¹Photon Systems Inc. Covina, Ca, USA; ²JPL/Caltech Pasadena, CA, USA; ³Framework, Silver Spring, Md, USA; ⁴Earth and Planetary Laboratory, Carnegie Institution for Science, Washington, DC.

3:35pm - 3:50pm

Camera System Development for Planetary Raman Spectrometers

Ian Hutchinson, Hannah Lerman, Melissa McHugh

University of Leicester, United Kingdom

3:50pm - 4:05pm

Raman Spectroscopy for Future Lunar Missions

Hannah Lerman, Ian Hutchinson, Melissa McHugh

University of Leicester, United Kingdom

4:05pm - 4:20pm

Probing The Effect of Proton Irradiation on Liquid Phase Exfoliated Graphene Layers

Narek Margaryan, Adrine Arshakyan, Naira Gasparyan, Eduard Aleksanyan

A. I. Alikhanyan National Science Laboratory, Armenia

4:20pm - 4:35pm

Raman inputs on the pressure-induced structural modifications in Remeika phase quasi skutterudite stannides

Boby Joseph

Elettra Sincrotrone Trieste, Italy

SERS, TERS, and Plasmonics

Monday, 29/July/2024

Session Chair: **Matz Liebel**

Location: **Aula Magna**

5:15pm - 5:35pm

Towards high-throughput SERS imaging and sensing

Matz Liebel^{1,3}, **Niek F. van Hulst**^{3,4}, **Ramon A. Alvarez-Puebla**^{2,3}

¹Department of Physics and Astronomy, VU Amsterdam, Amsterdam, The Netherlands; ²Department of Physical and Inorganic Chemistry and EMaS, Universitat Rovira i Virgili, Tarragona, Spain; ³ICFO - Institut de Ciències Fotoniques, The Barcelona Institute of Science and Technology, Barcelona, Spain; ⁴ICREA - Institutió Catalana de Recerca i Estudis Avançats, Barcelona, Spain

5:35pm - 5:50pm

Surface-enhanced Raman spectroscopy on non-plasmonic vanadium oxide nanoparticles

Marek Prochazka, **Eva Kocisova**, **David Novak**, **Ondrej Kylian**

Charles University, Faculty of Mathematics and Physics, Czech Republic

5:50pm - 6:05pm

Spatially resolved polarization dependent SERS using single gold nanoparticle on ultrasmooth mirror configurations

Felix Schneider, **David Baschnagel**, **Eric Juriatti**, **Philipp Haizmann**,

Thomas Chassé, **Heiko Peisert**, **Alfred Meixner**, **Dai Zhang**

Eberhard-Karls-University Tübingen, Germany

6:05pm - 6:20pm

Polarization dependent plasmon driven reactions on chiral SERS substrate

Shashank Kumar Gahlaut¹, **Ryeong M. Kim**², **Alexander O. Govorov**³, **Ki Tae Nam**², **Ilko Bald**¹

¹Institute of Chemistry, University of Potsdam, Germany; ²Department of Materials Science and Engineering, Seoul National University Seoul, Republic of Korea; ³Department of Physics and Astronomy, Nanoscale and Quantum Phenomena Institute, Ohio University, Athens, Ohio, United States

6:20pm - 6:35pm

Optimised fabrication of gold nanoparticle monolayer SERS substrates at the liquid-liquid interface

Siti Noriza Mohd Kamel^{1,2}, **Niall Hanrahan**^{1,2}, **Sumeet Mahajan**^{1,2}

¹Institute for Life Sciences, University of Southampton, Southampton, UK, SO17 1BJ; ²School of Chemistry, Faculty of Engineering and Physical Sciences, University of Southampton, Southampton, UK, SO17 1BJ

6:35pm - 6:50pm

Impact of metal nanoparticle size on plasmon-induced reactions

Christina Beresowski¹, **Sergio Kogikoski Jr.**¹, **Ilko Bald**¹, **Sabrina Jürgensen**², **Stephanie Reich**²

¹University of Potsdam, Germany; ²Free University of Berlin, Germany

6:50pm - 7:05pm

Metasurfaces for enhanced Raman scattering and photocatalysis

Ivano Alessandri

University of Brescia, Italy

Nonlinear and Impulsive Raman

Monday, 29/July/2024

Session Chair: **Shaul Mukamel**

Location: **Cabibbo (Fermi)**

5:15pm - 5:45pm

Impulsive stimulated Raman spectroscopy with frequency-correlated entangled photons and with X-ray pulses

Shaul Mukamel

UC Irvine, United States of America

5:45pm - 6:05pm

Impulsive stimulated Raman spectroscopy on large-amplitude wave packet dynamics in gas-phase molecules

YASUHIRO OHSHIMA

Tokyo Institute of Technology, Japan

6:05pm - 6:25pm

Time-Resolved Resonance Raman Spectroscopic Observation of Selected Arylnitrenium Ions

David Phillips

University of Hong Kong, Hong Kong S.A.R. (China)

6:25pm - 6:40pm

Impulsive stimulated Raman spectroscopy of squaraine dye molecules encapsulated inside carbon nanotubes

Miles Martinati¹, **Giovanni Batignani**^{1,2}, **Salomé Forel**³, **Emanuele Mai**^{1,2}, **Neethish Mohanan M.**¹, **Han Li**⁴, **Benjamin S. Flavel**⁵, **Wim Wenseleers**⁶, **Sofie Cambré**⁶, **Tullio Scopigno**^{1,7}

¹Dipartimento di Fisica, Sapienza, Università di Roma, Italy; ²Istituto Italiano di Tecnologia, Center for Life Nano Science @Sapienza, Roma, Italy; ³Université Claude Bernard Lyon 1, UMR CNRS 5615, Lyon, France; ⁴Department of Mechanical and Materials Engineering, University of Turku, Turku, Finland; ⁵Institute of Nanotechnology, Karlsruhe Institute of Technology, Karlsruhe, Germany; ⁶Physics Department, University of Antwerp, Antwerp, Belgium; ⁷Istituto Italiano di Tecnologia, Graphene Labs, Genova, Italy

6:40pm - 6:55pm

Nonlinear Raman spectroscopy of ChCl-EG Deep Eutectic Solvents

Miles Martinati¹, **Neethish Madathiparambil Mohanan**¹, **Elisa Emanuele**², **Emanuele Mai**^{1,3}, **Giovanni Batignani**^{1,3}, **Giulio Cerullo**⁴, **Benedetto Bozzini**², **Tullio Scopigno**^{1,5}

¹Dipartimento di Fisica, Università di Roma "La Sapienza", Roma I-00185, Italy; ²Dipartimento di Energia, Politecnico di Milano, via Lambruschini 4, 20156 Milano, Italy; ³Istituto Italiano di Tecnologia, Center for Life Nano Science @Sapienza, Roma I-00161, Italy; ⁴Dipartimento di Fisica, Politecnico di Milano, 20133 Milano, Italy; ⁵Istituto Italiano di Tecnologia, Graphene Labs, Via Morego 30, I-16163 Genova, Italy

6:55pm - 7:10pm

Single-pixel field-resolved coherent anti-Stokes Raman scattering with three-color excitation

Shupeng Zhao¹, **Lea Chibani**¹, **Edward Chandler**², **Jianqi Hu**¹,

Lorenzo Valzania¹, **Ulugbek S. Kamilov**², **Hilton Barbosa d. Aguiar**¹

¹Laboratoire Kastler Brossel, ENS-Université PSL, France; ²Washington University in St. Louis, MO 63130, USA

Coherent Raman Imaging II

Monday, 29/July/2024

Session Chair: **Lu Wei**

Location: **Ginestra (Chemistry)**

5:15pm - 5:45pm

Functional bond-selective microscopy for subcellular bioanalysis

Lu Wei

California Institute of Technology, United States of America

5:45pm - 6:05pm

Stimulated Raman Imaging of Lysosomotropic Drug Analogs and Lipid Dynamics in Live Cancer Cells

Yuhao Yuan¹, **Emmanuel O. Olawode**², **L. Nathan Tumey**², **Frank Fake Lu**¹

¹Department of Biomedical Engineering, Watson College of Engineering and Applied Science, Binghamton University, State University of New York, New York, United States of America 13902; ²School of Pharmacy and Pharmaceutical Sciences, Binghamton University, State University of New York, New York, United States of America 13902

6:05pm - 6:20pm

Silicon-enhanced alkyne tags for Raman and infrared-based imaging

Yong Li, **Katherine Townsend**, **Jennifer Prescher**, **Eric Potma**

UCI, United States of America

6:20pm - 6:35pm

Electronic Pre-Resonance Coherent Anti-Stokes Raman Scattering Microscopy

Rushikesh Burde, Andrea Pruccoli, Nico Reuter, Andreas Zumbusch

University of Konstanz, Germany

6:35pm - 6:50pm

Broadband background-free stimulated Raman microscopy with a new frequency-modulation scheme

Luca Genchi^{1,2}, Sergey P. Laptinok¹, Carlo Liberale¹

¹King Abdullah University of Science and Technology (KAUST), Biological and Environmental Science and Engineering, Thuwal, Saudi Arabia; ²Aix Marseille University, CNRS, Centrale Marseille, Institut Fresnel, Marseille, France

6:50pm - 7:05pm

Chirp modulation stimulated Raman scattering microscopy: completely background free vibrational imaging

Siddarth Shivkumar¹, Adrian F. Pegoraro², Albert Stolow^{1,2,3,4}

¹Department of Physics, University of Ottawa, Ottawa, Ontario K1N 6N5, Canada; ²National Research Council Canada, Ottawa, Ontario K1A 0R6, Canada; ³Department of Chemistry, University of Ottawa, Ottawa, Ontario K1N 6N5, Canada; ⁴NRC-uOttawa Joint Centre for Extreme Photonics, Ottawa, Ontario K1A 0R6, Canada

Raman Optical Activity I

Monday, 29/July/2024

Session Chair: Laurence A Nafie

Location: Conversi (Marconi)

5:15pm - 5:45pm

Raman Optical Activity: Biological and Biopharmaceutical Applications

Laurence A Nafie¹, Rina K Dukor², Kimblerly Quinn²

¹Syracuse University, United States of America; ²BioTools, Inc. United States

5:45pm - 6:05pm

Application of Raman optical activity spectroscopy to the study of microbial rhodopsins

Tomotsumi Fujisawa

Saga University, Japan

6:05pm - 6:25pm

Probing stereochemistry and Structure Using Raman optical activity (ROA)

Ewan Blanch, Jeremy Landry

RMIT University, Australia

6:25pm - 6:45pm

Raman Optical Activity of Chiral Biosupramolecular Systems

Agnieszka Kaczor

Jagiellonian University, Poland

6:45pm - 7:05pm

New horizons for Raman optical activity

Josef Kapitán

Palacky University Olomouc, Czech Republic

7:05pm - 7:20pm

Resonance Raman Optical Activity in the study of the iron oxidation state in heme proteins

Agnieszka Domagała^{1,2}, Jakub Dybaś¹, Małgorzata Barńska^{1,3}, Grzegorz Zajac¹

¹Jagiellonian University, Jagiellonian Centre for Experimental Therapeutics (JCET), Krakow, Poland; ²Jagiellonian University, Doctoral School of Exact and Natural Sciences, Krakow, Poland; ³Jagiellonian University, Faculty of Chemistry, Krakow, Poland

Art II

Monday, 29/July/2024

Session Chair: Claudia Conti

Location: Aula 3 (Fermi)

5:15pm - 5:30pm

A multi-analytical approach to investigate the altars' stuccoes in the Sant'Angelo complex in Barbarano Romano

Marta Sardara¹, Claudia Pelosi², Giorgio Capriotti³, Marta Cristofori³, Luca Lanteri², Armida Sodo¹

¹Dipartimento di scienze, Università degli studi RomaTre, Roma, Italy; ²Dipartimento di Economia, Ingegneria, Società e Impresa, Università degli Studi della Tuscia, Viterbo, Italy; ³Dipartimento per la Innovazione nei sistemi Biologici, Agroalimentari e Forestali, Università degli Studi della Tuscia, Viterbo, Italy

5:30pm - 5:45pm

Industrial coatings under the spotlight: Composition of paint layers of coated scrap metals

Christianne Grace Mendoza¹, Isabel Tissot², Nuno Camarneiro¹

¹Universidade Católica Portuguesa, Portugal; ²LIBPhys-UNL

5:45pm - 6:00pm

New Insights into Iron Gall Inks: Exploring Variations in Raman spectra through a Chemometric Approach

Malihe Sotoudeh^{1,2}, Paula Nabais^{1,2}, Vanessa Otero^{1,3}, João Lopes⁴

¹Department of Conservation and Restoration and LAQV-REQUIMTE Research Unit, Faculty of Sciences and Technology, NOVA University of Lisbon, Portugal; ²Institute of Medieval Studies Research Unit, NOVA University of Lisbon, Portugal; ³Department of Conservation and Restoration and VICARTE Research Unit, NOVA University of Lisbon; ⁴Med.U.Lisboa-Research Institute for Medicines, Faculty of Pharmacy

6:00pm - 6:15pm

Non-Invasive Molecular Diagnostics of the Allegory and Effects of Good and Bad Government by Ambrogio Lorenzetti

Daniele Ciofini¹, Juri Agresti¹, Marco Giamello², Andrea Azelio Mencaglia¹, Andrea Scala², Massimo Gavazzi³, Salvatore Siano¹, Iacopo Osticioli¹

¹Istituto di Fisica Applicata "N. Carrara" (IFAC-CNR), Florence, Italy; ²Dipartimento di Scienze Fisiche, della Terra e dell'Ambiente, University of Siena, Italy; ³Arc Arte Company S.n.c., Siena, Italy

6:15pm - 6:30pm

Flexible hydrogels for the non-invasive analysis of heritage dyes: introducing a new single-step formulated silver SERS substrate

Irene Bilbao Zubiri¹, Céline Daher², Nicolas Goubet¹, Ludovic Bellot-Gurlet¹, Aline Percot¹

¹Sorbonne Université, CNRS, de la Molécule aux Nano-objets : Réactivité, Interactions et Spectroscopies - MONARIS, Paris (France); ²MNHN, CNRS, Ministère de la Culture, Centre de Recherche sur la Conservation – CRC, Paris (France)

Biomedical Applications I

Monday, 29/July/2024

Session Chair: Anita Mahadevan-Jansen

Location: Amaldi (Marconi)

5:15pm - 5:45pm

Challenges in translating Raman spectroscopy for clinical applications

Anita Mahadevan-Jansen

Vanderbilt University, United States of America

5:45pm - 6:05pm

Depth-coded Stimulated Raman Scattering Tomography Enables Label-free Biomolecular and Functional 3D Imaging of Live Cells and Tissue

Zhiwei Huang

National University of Singapore, Singapore

6:05pm - 6:20pm

Quantification of Liver Fat: Size and Content Assessment via Combination of Raman Scattering and Reflectance in Human Specimens

Hao Guo^{1,2}, Ashley E. Stueck^{1,2}, Vanessa S. Zions³, Jason B. Doppenberg⁴, Yun Suk Chae⁴, Alexey B. Tikhomirov¹, Brent A. Law³, Haishan Zeng⁵, Boris L. Gala-Lopez^{1,2}, Anita Mahadevan-Jansen⁶, Marten A. Engelse⁴, Ian P. J. Alwayn⁴, Andrea Locke⁶, Kevin Cecil Hewitt¹

¹Dalhousie University, Canada; ²Nova Scotia Health Authority, Canada; ³Bedford Institute of Oceanography, Canada; ⁴Leiden University Medical Center, Netherlands; ⁵BC Cancer Research Centre, Canada; ⁶Vanderbilt University, USA

6:20pm - 6:35pm

Insights into osteopetrosis: Raman and Brillouin microscopies for studying a rare genetic disorder

Renzo Vanna¹, Marco Ventura¹, Morteza Behrouzitabar², Maria Lucia Schiavone^{3,4}, Dario Strina^{3,4}, Cristian Manzoni¹, Giulio Cerullo^{1,2}, Dario Polli^{1,2}, Cristina Sobacchi^{3,4}, Giuseppe Antonacci⁵

¹Consiglio Nazionale delle Ricerche - Istituto di Fotonica e Nanotecnologie (CNR-IFN), Milan, Italy; ²Dipartimento di Fisica, Politecnico di Milano, Milan, Italy; ³Consiglio Nazionale delle Ricerche - Istituto di Ricerca Genetica e Biomedica (CNR-IRGB), Milan, Italy; ⁴IRCCS Humanitas Research Hospital, Milan, Italy; ⁵Spectro Photonics, Milano, Italy

6:35pm - 6:50pm

Investigation of cell oxidative stress and scavenging strategies by Raman Spectroscopy in cytological thyroid samples

Michael Di Gioacchino¹, Anda Mihaela Naciu², Martina Verri^{1,3}, Alessandra di Masi¹, Chiara Taffon³, Andrea Palermo², Anna Crescenzi⁴, Armida Sodo¹

¹Dipartimento di Scienze, Università degli studi Roma Tre, Italy; ²Department of Endocrinology and Diabetes, Campus Bio-Medico University, Italy; ³Department of Pathology, University Hospital Campus Bio-Medico, Italy; ⁴Department of Oncological Radiological and Pathological Sciences, Sapienza University of Rome, Italy

6:50pm - 7:05pm

The potential of Raman Spectroscopy for Accurate Identification of Hemoglobin Variants in Diabetes Diagnostics

Sara Abbasi¹, Mehdi Feizpour¹, Ilse Weets², Qing Liu³, Hugo Thiepont³, Francesco Ferranti³, Heidi Ottevaere³

¹Vrije Universiteit Brussel, Belgium; ²Universitair Ziekenhuis Brussel; ³Vrije Universiteit Brussel and Flanders Make

Materials II

Monday, 29/July/2024

Session Chair: Xiaoqin Elaine Li

Location: Aula A (Chemistry)

5:15pm - 5:35pm

Lattice reconstructions and strain in moiré superlattices

Xiaoqin Elaine Li

University of Texas Austin, United States of America

5:35pm - 5:50pm

Temperature- and pressure-dependent phonon dynamics properties of GaSeTe

Victor Oliveira¹, Fábio Leite¹, Francisco Silva², Francisco Oliveira³, Francisco Araujo⁴, Alan Menezes⁵, Waldeci Paraguassu¹, Antonio Souza Filho³, Bartolomeu Viana⁶, Rafael Alencar³

¹Federal University of Para, Brazil; ²Federal Institute of Education, Science and Technology of Maranhao, Brazil; ³Federal University of Ceara, Brazil; ⁴Federal Institute of Education, Science and Technology of Piauí, Brazil; ⁵Federal University of Maranhão; ⁶Federal University of Piauí

5:50pm - 6:05pm

Raman spectroscopic studies of commercial graphite fibers modified with copper (II) chloride

Aleksandra Weselucha-Birczyńska¹, Anna Kołodziej¹, Aleksandra Pasik¹, Stanisław Błazewicz²

¹Jagiellonian University in Krakow, Poland; ²AGH - University of Science and Technology, Krakow, Poland

6:05pm - 6:20pm

Photoluminescence and Raman Map Analysis of Methylammonium Chloride Treated Formamidinium Lead Iodide (FAPbI₃) Microstructural Phases

Nurwarrohman Andre Sasongko, Jaeseong Heo, Myeongkee Park
BB21+ Program, Department of Chemistry, Pukyong National University, Busan, Korea

6:20pm - 6:35pm

Vibrational spectroscopy inside silicon by stimulated Raman scattering at telecom wavelength

Yuki Sano¹, Kenichi Oguchi², Yasuyuki Ozeki^{1,2}

¹Department of Electrical Engineering and Information Systems, The University of Tokyo; ²Research Center for Advanced Science and Technology, The University of Tokyo

6:35pm - 6:50pm

Investigation of the Marangoni bursting effect on a non-linear optical dye with Raman microspectroscopy.

Vitor Hugo Paschoal, Pawel Karpinski

Wroclaw University of Science and Technology, Poland

Geoscience

Monday, 29/July/2024

Session Chair: Peter Vandenabeele

Location: Aula 4 (Fermi)

5:15pm - 5:45pm

The role of Mobile Raman Instrumentation in Geosciences – Sensu Lato

Peter Vandenabeele

Ghent University, Belgium

5:45pm - 6:00pm

Raman Spectroscopic and X-ray diffraction studies to characterise Burugubanda Graphite Deposits in south-eastern parts of Eastern Ghats Mobile Belt, India

Girish Kumar Mavachar

Geological Survey of India, India

6:00pm - 6:15pm

Development of a Raman Spectrometer Autofocus System

Jack Michael Gordon Strachan-Deol, Ian Hutchinson, Hannah Lerman, Melissa McHugh

University of Leicester, United Kingdom

6:15pm - 6:30pm

Using Raman spectroscopy to help solve the Stonehenge enigma

Sergio Andò¹, Marta Barbarano¹, Jorge Diniz², Tim Batten², Riccardo Tagliapietra², Richard E. Bevins³, Nick J.G. Pearce³

¹Department of Earth and Environmental Sciences, University of Milano-Bicocca, Italy; ²Renishaw plc, United Kingdom; ³Department of Geography and Earth Sciences, Aberystwyth University, United Kingdom

6:30pm - 6:45pm

Unlocking Qualitative and Quantitative Soil Inspection by Means of Shifted Excitation Raman Difference Spectroscopy

Kay Sowoidnich, Martin Maiwald, Bernd Sumpf

Ferdinand-Braun-Institut gGmbH, Leibniz-Institut für Höchstfrequenztechnik, Germany

Tuesday 30 July

Plenary

Tuesday, 30/July/2024

Session Chair: Shiv Sharma

Location: Aula Magna

8:45am - 9:30am

The Compact Integrated Raman Spectrometer (CIRS)

James Lambert¹, Steve Monacos¹, Tuan Vu¹, Aria Vitkova¹, Ian Hutchinson², Hannah Lerman², Melissa McHugh², Alian Wang³, Bradley Jolliff³

¹Jet Propulsion Laboratory, United States of America; ²University of Leicester, United Kingdom; ³Washington University in St. Louis, United States of America

Plenary

Tuesday, 30/July/2024

Session Chair: Laura Fabris

Location: Aula Magna

9:30am - 10:15am

Surface-enhanced Raman scattering of biological samples

Janina Kneipp

Humboldt-Universität zu Berlin, Germany

Discussion with ERC

Tuesday, 30/July/2024

Session Chair: Giovanni Batignani

Location: Aula Magna

12:45pm - 1:15pm

European Research Council info session

Daniele Mammoli

Editors Roundtable

Tuesday, 30/July/2024

Session Chair: Eric Potma

Location: Ginestra (Chemistry)

12:45pm - 1:15pm

Journal info session with editors

Wednesday 31 July

Plenary

Wednesday, 31/July/2024

Session Chair: Natalie Anne Belsey

Location: Aula Magna

8:45am - 9:30am

Raman-based subcellular pharmaco-metabolomics

Anna Pieczara, Wiktoria Korona, Anna Nowakowska, Krzysztof Brzozowski, Barbara Orzechowska, Malgorzata Baranska
Jagiellonian University, Poland

Sponsor Presentations

31/July/2024

9:55am - 10:20am

Location: Aula Magna

Enhanced AFM with chemical signature for comprehensive material characterization

Joao Lucas Rangel

HORIBA, France

9:55am - 10:20am

Location: Cabibbo (Fermi)

Applications of THz-Raman in pharmaceutical drug discovery, formulation, and manufacturing

Anjan Roy

Coherent Corp.

9:55am - 10:20am

Location: Ginestra (Chemistry)

Simultaneous and colocalised Raman and SEM imaging for correlated multimodal analysis

Jorge Diniz¹, Jennifer Ferguson¹, Pete Johnson¹, Riccardo Tagliapietra², Tim Batten¹

¹Renishaw plc, United Kingdom; ²Renishaw SpA, Italy

9:55am - 10:20am

Location: Conversi (Marconi)

Miniaturized high-end Raman spectrometers and microscopes without performance compromise

Oleksii Ilchenko

Lightnovo ApS, Denmark

9:55am - 10:20am

Location: Aula 3 (Fermi)

Ultrafast Lasers for Raman Spectroscopy and Microscopy

Jonas Berzins, Vaidotas Stalilionis, Dominykas Gudavicius, Lukas Kontenis, Mantvydas Mikulis, Marco Arrigoni

Light Conversion, Lithuania

9:55am - 10:20am

Location: Amaldi (Marconi)

Multimodal submicron Widefield IR, Simultaneous Raman and Fluorescence microscopy: When Autofluorescence becomes your new friend

Mustafa Kansiz, Miriam Unger, Craig Prater

9:55am - 10:20am

Location: Aula A (Chemistry)

Multiplexing stimulated Raman microscopy for biomedical imaging and chemometric histology

Matteo Negro

Cambridge Raman Imaging, Italy

TERS Nanoimaging

Wednesday, 31/July/2024

Session Chair: Andrey Krayev

Location: Aula Magna

10:20am - 10:40am

Gap-mode TERS of TMDs on metallic substrates: unexpected peculiarities and applications for Janus TMDs nanoscale structural characterization.

Andrey Krayev

HORIBA Scientific, United States of America

10:40am - 11:00am

Tip-Enhanced Raman Spectroscopy for Chemical and Structural Characterization of Tau Amyloid Fibrils

Gary Sean Cooney¹, David Talaga¹, Vicky Ury-Thierry², Yann Fichou², Yuhang Huang¹, Sophie Lecomte², Sébastien

Bonhommeau¹

¹University of Bordeaux, Institut des Sciences Moléculaires (ISM - CNRS UMR 5255), F-33400 Talence, France; ²University of Bordeaux, Institut de Chimie & Biologie des Membranes & des Nano-objets (CBMN - CNRS UMR 5248), F-33600 Pessac, France

11:00am - 11:20am

Selective Accumulation of SERS Signal by Density-Based Clustering Analysis

Yuika Saito, Takahiro Kondo, Kota Uchiyama

Gakushuin University, Japan

Theory and Computation: Raman in Extended Systems

Wednesday, 31/July/2024

Session Chair: Sai Duan

Location: Cabibbo (Fermi)

10:50am - 11:05am

Simulation of IR and Raman signals in liquid water from molecular dynamics: Effect of the hydrogen bond network

Taras Bryk^{1,2}, Roolphe Vuilleumier³, Ari Paavo Seitonen^{3,4}

¹Institute for Condensed Matter Physics of the National Academy of Sciences of Ukraine, Lviv; ²Lviv Polytechnic National University; ³École Normale Supérieure, Paris; ⁴Physikalisch-Chemisches Institut, Universität Zürich

11:05am - 11:20am

Raman spectroscopy of heavily doped graphenes

Ping-Heng Tan

Institute of Semiconductors, Chinese Academy of Sciences, China, People's Republic of

11:20am - 11:35am

Optical transition energies and symmetry-dependent electron-phonon enhancement in graphene nanoribbons obtained by resonance Raman scattering

Cristiano Fantini¹, Viviane Nascimento¹, Gabriela Barin², Ariete Righi¹, Marcos Pimenta¹

¹Universidade Federal de Minas Gerais - UFMG, Brazil; ²nanotech@surfaces Laboratory, Empa, Swiss Federal Laboratories for Materials Science and Technology, Switzerland.

Biomedical Microspectroscopic Imaging

Wednesday, 31/July/2024

Session Chair: Christoph Krafft

Location: Ginestra (Chemistry)

10:20am - 10:50am

Progress of biomedical Raman microspectroscopic

imaging

Christoph Krafft¹, Jürgen Popp^{1,2}

¹Leibniz IPHT, Germany; ²Friedrich Schiller University Jena, Germany

10:50am - 11:10am

Development of a unified Raman spectroscopy and mass spectrometry bioimaging instrument

Mads Bergholt

King's College London, United Kingdom

11:10am - 11:25am

Optical Photothermal Infrared (O-PTIR) and Raman Spectroscopic Study of Tauopathy Signatures in a Mouse Model of Alzheimer's Disease

Hao Meng¹, Marcia Teixeira Curtinha¹, Francesco Tamagnini², Nick Stone¹, Wendy Noble¹, Francesca Palombo¹

¹University of Exeter, United Kingdom; ²University of Reading, United Kingdom

11:25am - 11:40am

Differentiability of cell types enhanced by detrending non-homogeneous pattern in line-illumination Raman microscope.

Jean-Emmanuel Clément¹, Abdul Halim Bhuiyan², Zannatul Ferdous¹, Kentaro Mochizuki³, James Nicholas Taylor⁴, Koji Tabata¹, Yasuaki Kumamoto⁶, Yoshinori Harada³, Thomas Bocklitz⁵, Katsumasa Fujita⁶, Tamiki Komatsuzaki¹

¹Hokkaido University, Japan; ²Bangladesh University of Engineering and Technology, Bangladesh; ³Kyoto Prefectural University of Medicine, Japan; ⁴National Institute of Advanced Industrial Science and Technology (AIST), Japan; ⁵Leibniz Institute of Photonic Technology, Germany; ⁶Osaka University, Japan

11:40am - 11:55am

Raman imaging of Fabry disease-specific lipid accumulations in cardiac cells

Johann Georg Dirk Dierks¹, Paula Arias-Loza², Peter Nordbeck², Thomas Bocklitz^{3,4}, Kristina Lorenz^{1,5,6}, Elen Tolstik¹

¹Leibniz-Institut für Analytische Wissenschaften - ISAS e.V., Germany; ²Department of Nuclear Medicine, University Hospital Würzburg, Würzburg, Germany; ³Leibniz Institute of Photonic Technology, Germany; ⁴University of Jena, Jena, Germany; ⁵Institute of Pharmacology and Toxicology, Würzburg, Germany; ⁶Comprehensive Heart Failure Center, Würzburg, Germany

Raman Optical Activity II

Wednesday, 31/July/2024

Session Chair: Vikas Kumar

Location: **Conversi (Marconi)**

10:20am - 10:40am

Towards Asymmetric Reaction Monitoring in Organocatalysis by Coherent Raman Optical Activity (CARS-ROA) Spectroscopy

Vikas Kumar¹, Luca Supovec¹, Nikolai Brodt², Jochen Niemeyer², Sebastian Schlücker¹

¹Physical Chemistry, Center for Nanointegration Duisburg-Essen (CENIDE), University of Duisburg-Essen, Essen, Germany; ²Organic Chemistry, Center for Nanointegration Duisburg-Essen (CENIDE), University of Duisburg-Essen, Essen, Germany

10:40am - 11:00am

Unraveling the Structural Polymorphism of Mononucleotide G-Quadruplexes via Raman Optical Activity

Štěpán Jílek¹, Josef Kapitán², Mohammed Siddique Para Kkadan^{1,3}, Petr Bouř³, Ivan Barvík¹, Václav Profant¹

¹Institute of Physics, Faculty of Mathematics and Physics, Charles University, Ke Karlovu 3, 121 16 Prague 2, Czech Republic; ²Department of Optics, Faculty of Science, Palacky University Olomouc, 17. Listopadu, 771 46 Olomouc, Czech Republic; ³Institute of Organic Chemistry and Biochemistry AS CR v.v.i., Flemingovo namesti 2, 166 10 Prague 6, Czech Republic

11:00am - 11:15am

Plasmonic nanohelices for surface enhanced Raman spectroscopy with circularly polarized light

John F Kerr¹, Robin R Jones¹, Cornelia Miksch², Hyunah Kwon², Coosje Pothoven³, Kristina R Rusimova¹, Maarten Kamp³, Kedong Gong⁴, Liwu Zhang⁴, Tim Batten⁵, Brian Smith⁵, Alejandro V Silhanek⁶, Peer Fischer², Daniel Wolverson¹, Ventsislav K Valev¹

¹Centre for Photonics and Photonic Materials and Centre for Nanoscience and Nanotechnology, University of Bath; ²Max Planck Institute for Medical Research – Heidelberg, Germany; ³VSPARTICLE – The Netherlands; ⁴Department of Environmental Science and Engineering, Fudan University – Shanghai, China; ⁵Renishaw plc – Kingswood, UK; ⁶Experimental Physics of Nanostructured Materials, University of Liège – Sart Tilman, Belgium

11:15am - 11:30am

Giant Raman Optical Activity in chiral and polar Ni₃TeO₆

Philipp Stein, Thomas C. Koethe, Markus Grüninger, Paul H.M. van Loosdrecht

Institute of Physics II, University of Cologne, Germany

Trace Detection I

Wednesday, 31/July/2024

Session Chair: Judy Kim

Location: **Aula 3 (Fermi)**

10:20am - 10:35am

Flame-fabricated SERS substrates for chemical and biological sensing

Haipeng Li^{1,2}, Georgios Sotiriou¹

¹Department of Microbiology, Tumor and Cell Biology, Karolinska Institutet, SE-17177 Stockholm, Sweden; ²Institute of Materials Science, Faculty of Engineering, Kiel University, 24143 Kiel, Germany

10:35am - 10:50am

Nanomotors: A dynamic approach for rapid capture and SERS detection of low-concentration emerging pollutants

Zhiqin Geng^{1,2}, Caiqin Han¹, Lulu Qu¹

¹Jiangsu Normal University, China, People's Republic of; ²Nanjing University of Science and Technology, People's Republic of

10:50am - 11:05am

Silver Nanoparticles in the Langmuir-Blodgett Film matrix of Stearic Acid as SERS active sensor for Detecting Paraquat Herbicide

ANABADYA PAL

University of Kalyani, India

11:05am - 11:20am

SERS detection of marine biotoxins

Bernardo Albuquerque Noqueira¹, Verónica Silva¹, Miguel Chaves de Sousa¹, Aitor Alvarez¹, Diogo Cachetas¹, Marília Santos¹, Clara Ponte¹, Joana Araújo¹, Laura M. Salonen^{1,2}, Begoña Espiña¹, Laura Rodriguez-Lorenzo¹

¹International Iberian Nanotechnology Laboratory, Portugal; ²CINBIO, Universidade de Vigo, Spain

Biosensing II

Wednesday, 31/July/2024

Session Chair: Frederic LeBlond

Location: **Amaldi (Marconi)**

10:20am - 10:35am

Detection of Vaginal Lactobacillus using Surface-Enhanced Raman Spectroscopy

Anna Rourke-Funderburg^{1,2}, Anita Mahadevan-Jansen^{1,2}, Andrea Locke^{1,2,3}

¹Vanderbilt Biophotonics Center, Vanderbilt University, USA; ²Department of Biomedical Engineering, Vanderbilt University, USA; ³Department of Chemistry, Vanderbilt University, USA

10:35am - 10:50am

Applications of Multi-Excitation Raman Spectroscopy (MX-Raman) for Rapid Bacterial Identification

Niall Hanrahan^{1,2}, Callum J Highmore^{3,4}, Jeremy S Webb^{3,4}, Sumeet Mahajan^{1,2}

¹Institute for Life Sciences, University of Southampton, Southampton, UK, SO17 1BJ; ²School of Chemistry, Faculty of Engineering and Physical Sciences, University of Southampton, Southampton, UK, SO17 1BJ; ³School of Biological Sciences, Faculty of Environmental and Life Sciences, University of Southampton, Southampton, UK, SO17 1BJ; ⁴National Biofilms Innovation Centre (NBIC), University of Southampton, Southampton, UK, SO17 1BJ

10:50am - 11:05am

Unlocking Bacterial Health with Raman Marker Analysis: Insights into Membrane Dynamics and Cellular Resilience

Elisa Fardelli¹, Michael Di Gioacchino¹, Massimiliano Lucidi¹, Giulia Capecchi¹, Noemi Gallucci², Paolo Visca^{1,3}, Armida Sodo¹, Luigi Paduano², Giovanni Capellini^{1,4}

¹Roma Tre, Italy; ²Federico II, Italy; ³Fondazione Santa Lucia, Italy; ⁴Leibniz Institut für innovative Mikroelektronik, Germany

11:05am - 11:20am

Detection of Microbial Species using Raman Spectroscopy

Twinkle Soni¹, Himanshu Soni², Shalini Rangarajan², Gaurav Singh², Sumit Saxena^{1,2}, Bayden Wood^{1,3}, Donald McNaughton^{1,3}, Shobha Shukla^{1,2}

¹IITB-Monash Research Academy, Mumbai, India; ²MEMS- IIT-Bombay, Mumbai, India; ³Monash University, Clayton, Australia

11:20am - 11:35am

A Quantitative Chemometric Study of Pharmaceutical Tablet Formulations Using Multi-Spectroscopic Fiber Optic Probes

Peter III Johannes Gabriel Ricafrente Remoto¹, Sara Fraser-Miller², Keith Gordon¹

¹University of Otago, Dunedin, New Zealand; ²Flinders University, Adelaide, Australia

11:35am - 11:50am

Improved detection of therapeutic drugs through electrochemically assisted surface-enhanced Raman spectroscopy (EC-SERS): towards therapeutic drug monitoring

Isidro Badillo-Ramírez

Technical University of Denmark, Denmark

Operando Raman I

Wednesday, 31/July/2024

Session Chair: Miguel A. Bañares

Location: Aula A (Chemistry)

10:20am - 10:50am

Operando Raman studies on functional materials: assessing structure-activity relationships on oxide-based and shaped catalysts

Miguel A. Bañares

CSIC, Spain

10:50am - 11:05am

Ultrasensitive plasmon-enhanced Raman spectroscopy: from single-molecule detection to in situ/operando characterizations

Chaoyu Li

Tongji University, China, People's Republic of

11:05am - 11:20am

SERS characterization of atomic level adsorption sites on Pd/Au catalysts during electrocatalytic CO₂ reduction

Naiving Hao, Wen Luo, Zhouguang Lu, Jin-Hui Zhong

Southern University of Science and Technology, Shenzhen, People Republic of China

11:20am - 11:35am

Raman spectroelectrochemistry of IrO₂ and Ir nanoparticles in oxygen evolution reaction

Angelja K. Surca, Leonard Moriau, Anja Logar, Luka Suhadolnik, Marjan Bele, Nejc Hodnik

National Institute of Chemistry, Slovenia

Imaging: General

Wednesday, 31/July/2024

Session Chair: Karen Faulds

Location: Aula 4 (Fermi)

10:20am - 10:35am

Rapid morpho-chemical analysis of cancer cells with a turnkey stimulated Raman imaging system

Tim Hellwig, Steffen Ullmann, Ramon Droop, Christoph Engwer, Felix Neumann, Niklas Lüpken, Sven Dobner, Anke Bonse, Max Brinkmann

Refined Laser Systems GmbH, Germany

10:35am - 10:50am

Correlative nano-FTIR and AFM-Raman spectroscopy

Philip Schäfer, Korbinian Kaltenecker, Andreas Huber

Attocube Systems AG, Germany

10:50am - 11:05am

Laser-induced nano structuring for SERS of Extracellular Vesicles

Francesco Merola¹, Simon Barter¹, Jeffery Low¹, Genevieve Boom², Lynsey Cree², Larry Chamley², Neil G.R. Broderick¹

¹Department of Physics, University of Auckland, New Zealand; ²Department of Obstetrics and Gynaecology, The University of Auckland, New Zealand

11:05am - 11:20am

Thousand foci CARS microscopy

Dominykas Gudavičius^{1,2}, Lukas Kontenis¹, Wolfgang Langbein²

¹Light Conversion, Keramiku st. 2B, LT-10233 Vilnius, Lithuania; ²Cardiff University, School of Physics and Astronomy, The Parade, Cardiff CF24 3AA, United Kingdom

11:20am - 11:35am

High-rejection and common-path birefringent filter for Brillouin microscopy in turbid media

Giuseppe Antonacci¹, Renzo Vanna², Marco Ventura², Maria Lucia Schaivone^{3,4}, Cristina Sobacchi^{3,4}, Morteza Behrouztabar^{2,5}, Dario Polli^{1,2,5}, Cristian Manzoni², Giulio Cerullo^{2,5}

¹Specto Photonics, Milan (Italy); ²CNR-Istituto di Fotonica e Nanotecnologie, Milan (Italy); ³CNR-Istituto di Ricerca Genetica e Biomedica, Milan (Italy); ⁴IRCCS Humanitas Research Hospital, Milan (Italy); ⁵Dipartimento di Fisica, Politecnico di Milano, Milan (Italy)

11:35am - 11:50am

WISER: Wide-field Imaging with Super-resolution Enabled by Raman Signals

Deb Roy¹, Himanshu Tyagi¹, Pietro Apro², Paolo Olivero², Bernd Boddermann³

¹Department of Chemistry, Swansea University, United Kingdom; ²National Institute of Nuclear Physics, Italy; University of Torino; ³Physikalisch-Technische Bundesanstalt, Germany

Surface Science

Wednesday, 31/July/2024

Session Chair: Katrin F. Domke

Location: Aula Magna

12:00pm - 12:30pm

Dive right in! Molecular insights into electrochemical surface science.

Katrin F. Domke^{1,2}

¹University of Duisburg-Essen, Germany; ²Max Planck Institute for Polymer Research, Germany

12:30pm - 12:50pm

Coupling optical tweezers with tip-enhanced Raman spectroscopy for the investigation of individual supramolecular systems

Natalia Martín Sabanés, Gloria Tobajas-Curiel, Rebeca Bocanegra, Borja Ibarra, Emilio M. Pérez

IMDEA nanoscience, Spain

12:50pm - 1:05pm

Visualizing the structural evolution of individual active sites of MoS₂ during hydrogen evolution reactions

Xiang Wang

Xiamen University, China, People's Republic of

Interplay of Electronic and Vibrational Dynamics

Wednesday, 31/July/2024

Session Chair: Jeffrey Cina

Location: Cabibbo (Fermi)

12:00pm - 12:30pm

Electronic interference and Berry-phase acquisition effects in the wave-packet dynamics of an excitation-transfer trimer

Jeffrey A Cina

University of Oregon

12:30pm - 12:50pm

Raman spectrum of the perpendicular phantom state in cis-trans photoisomerization

Tahei Tahara

RIKEN, Japan

12:50pm - 1:10pm

Tracking the Ultrafast Interplay between Excited State Proton Transfer and Chromophore Ring Twists with Tunable Femtosecond Stimulated Raman Spectroscopy
Chong Fang, Cheng Chen, Taylor D. Krueger, Jiawei Liu, Janak Solaris, Logan S. Lancaster

153 Gilbert Hall, Department of Chemistry, Oregon State University, Corvallis, OR 97331 United States of America

Biological Raman Imaging I

Wednesday, 31/July/2024

Session Chair: Ping Wang

Location: Ginestra (Chemistry)

12:00pm - 12:30pm

Ultrafast Full-spectral Raman Imaging with MHz Spectral Rate and Single Photon Sensitivity

Ping Wang

Changping Laboratory, China, People's Republic of

12:30pm - 12:45pm

Tracking NO-dependent changes of the cytochrome c oxidation state in endothelial cells by resonance Raman imaging

Jakub Dybas, Amanda Bartkowiak, Ewa Szczesny-Malysiak

Jagiellonian University, Jagiellonian Centre for Experimental Therapeutics (JCET), 14 Bobrzyńskiego Str., 30–348 Krakow, Poland

12:45pm - 1:00pm

High-throughput cellular imaging with reduced out-of-focus background in multiline illumination Raman microscopy
Tomoaki Okumura^{1,2}, Yasuaki Kumamoto^{1,3}, Katsumasa Fujita^{1,2,3}

¹Department of Applied Physics, Osaka University, 2-1 Yamadaoka, Suita, Osaka 565-0871, Japan; ²AIST-Osaka University Advanced Photonics and Biosensing Open Innovation laboratory, National Institute of Advanced Industrial Science and Technology (AIST), 2-1 Yamadaoka, Suita, Osaka 565-0871, Japan; ³Institute for Open and Transdisciplinary Research Initiatives, Osaka University, 2-1 Yamadaoka, Suita, Osaka 565-0871, Japan

1:00pm - 1:15pm

Molecular indicators of cellular interactions in the blood-brain barrier: 2D and 3D models

Anna Antolak¹, Aleksandra Pragnača^{1,2}, Karolina Augustyniak^{1,2}, Monika Leśniak³, Robert Zdanowski³, Kamilla Malek¹

¹Jagiellonian University in Krakow, Poland; ²Jagiellonian University, Doctoral School of Exact and Natural Sciences, Jagiellonian University in Krakow, Poland; ³Military Institute of Medicine – National Research Institute, Poland

Diffuse Raman

Wednesday, 31/July/2024

Session Chair: Pavel Matousek

Location: Conversi (Marconi)

12:00pm - 12:30pm

Probing of Diffusely Scattering Media using Spatially Offset Raman Spectroscopy (SORS)

Pavel Matousek¹, Sara Mosca¹, Megha Mehta², William Skinner², Benjamin Gardner², Francesca Palombo², Nicholas Stone²

¹Rutherford Appleton Laboratory, United Kingdom; ²University of Exeter, United Kingdom

12:30pm - 12:50pm

Surface-Enhanced Spatially Offset Raman Spectroscopy: Neurochemical Sensing for Human Health Monitoring

Bhavva Sharma

University of Tennessee, United States of America

12:50pm - 1:10pm

Raman Spectroscopy, a versatile tool to study SERS biodistribution ?

Benjamin Gardner¹, Alexandra Vaideanu², Ryan Mellor², Andreas Schatzlein², Ijeoma Uchegbu², Pavel Matousek³, Nick Stone¹

¹University of Exeter, United Kingdom; ²University College London; ³Rutherford Appleton Laboratory (STFC)

Gas Phase CARS

Wednesday, 31/July/2024

Session Chair: Robert LUCHT

Location: Aula 3 (Fermi)

12:00pm - 12:30pm

Applications of Femtosecond Coherent Anti-Stokes Raman Scattering (CARS) for High-Pressure Combustion Measurements

Robert LUCHT

Purdue University, United States of America

12:30pm - 12:50pm

High-resolution fs/ps coherent anti-Stokes Raman scattering for combustion and propulsion systems

Chloe E. Dedic¹, Alan J. Kim¹, Ryan J. Thompson¹, Andrew D. Cutler², Laurie A. Elkowitz¹

¹University of Virginia, United States of America; ²The George Washington University, United States of America

12:50pm - 1:10pm

Spinning molecules to their breaking point, and beyond, with a Raman-based optical centrifuge

Christopher Kliewer

Sandia National Labs, United States of America

Translational Clinical Raman

Wednesday, 31/July/2024

Session Chair: Juergen Popp

Location: Amaldi (Marconi)

12:00pm - 12:30pm

Translational Clinical Raman Spectroscopy

Juergen Popp^{1,2}

¹Friedrich-Schiller University Jena, Germany; ²Leibniz Institute of Photonic Technology e.V. Jena

12:30pm - 12:50pm

Macroscopic inelastic scattering imaging techniques for intraoperative margins assessment in brain and breast cancer: Use cases and pilot clinical data

Frederic Leblond^{1,2}

¹Polytechnique Montreal, Canada; ²Centre de recherche du Centre hospitalier de l'Université de Montréal (CRCHUM), Canada

12:50pm - 1:05pm

Resonance Raman Spectroscopy for in vivo Monitoring of Regional Tissue Oxygenation

Hannah Elizabeth Sheridan¹, Jihee Sun¹, Hannah Matthews¹, Michel Nieuwoudt¹, Anthony Phillips¹, Michelle Locke^{1,2}

¹University of Auckland, New Zealand; ²Department of Plastic Surgery, Middlemore Hospital, Auckland, New Zealand

1:05pm - 1:20pm

In-clinic differentiation of skin cancers from benign skin lesions and inflammatory dermatoses with a portable Raman system.

Michel Karin Nieuwoudt^{1,2,3,4}, Paul Jarrett^{5,6}, Hannah Marie Matthews^{1,2,3,4}, Michelle Locke^{7,8}, Marco Bonesi^{1,2,3,4,9}, Brydon Burnett^{1,2}, Hannah Holtkamp^{1,2,3}, Claude Agueraray^{2,3,4,9}, Hannah Sheridan^{1,2,3,4}, Ira Mautner^{2,3,4,9}, Thom Minnee^{1,2,3,4}, M. Cather Simpson^{1,2,3,4,9}

¹School of Chemical Sciences, The University of Auckland, New Zealand; ²The Photon Factory, University of Auckland, Auckland, New Zealand; ³The Dodd Walls Centre for Photonic and Quantum Technologies, Dunedin, New Zealand; ⁴The MacDiarmid Institute for Advanced Materials and Nanotechnology, Wellington, New Zealand; ⁵Department of Dermatology, Middlemore Hospital, Auckland, New Zealand; ⁶Department of Medicine, University of Auckland, Auckland, New Zealand; ⁷Department of Plastic Surgery, Middlemore Hospital, Auckland, New Zealand; ⁸Department of Surgery, University of Auckland, Auckland, New Zealand; ⁹Department of Physics, University of Auckland, Auckland, New Zealand

Operando Raman II

Wednesday, 31/July/2024

Session Chair: Emmanuel MaisonHaute

Location: Aula A (Chemistry)

12:00pm - 12:20pm

Electrochemical reactivity analysed by enhanced Raman approaches. Focus on temporal and spatial resolutions.
Jad Rabah¹, Come Defontaine¹, Ivan Lucas¹, Alice Fiocco¹, Aja Pavlik¹, Yaovi Holade², Emmanuel Maisonhaute¹

¹Sorbonne Université, LISE, 4 place Jussieu, 75005 Paris, France; ²Institut Européen des Membranes, IEM, UMR 5635, Univ Montpellier, ENSCM, CNRS, 34090 Montpellier, France

12:20pm - 12:35pm

In situ Raman Reveals the Structure and Dissociation of Interfacial Water

Yao-Hui Wang¹, Shi-Sheng Zheng¹, Feng Pan², Jian-Feng Li¹

¹Xiamen University, China; ²Peking University, Shenzhen Graduate School, China

12:35pm - 12:50pm

In-situ Raman Spectroscopy Study of Electrocatalytic Reactions

Xing Chen, Fan Gao, Jin-Chao Dong, Jian-Feng Li

College of Energy, Xiamen University, P.R. China.

12:50pm - 1:05pm

Water harvesting at the single crystal level

Fabian Knechtel¹, Jonas Tittel¹, Orysia Zaremba², Stefan Wuttke², Omar M Yaghi³, Evelyn Ploetz¹

¹Ludwig-Maximilians-Universität München, Germany; ²BCMaterial, Leioa, Spain; ³University of California, Berkeley, USA

1:05pm - 1:20pm

Studies on the growth mechanisms of protective scales on ferritic steels using Raman spectroscopy under in-situ and ex-situ conditions

Maciej Bik¹, Mathias Christian Galetz², David Kniep², Piotr Jeleń¹

¹AGH University of Krakow, Faculty of Materials Science and Ceramics, al. Mickiewicza 30, 30-059 Cracow, Poland; ²DECHEMA-Forschungsinstitut, Theodor-Heuss-Allee 25, D-60486 Frankfurt am Main, Germany

Trace Detection II

Wednesday, 31/July/2024

Session Chair: **Jianan Huang**

Location: **Aula 4 (Fermi)**

12:00pm - 12:15pm

Ultra-sensitive detection of Terbutryn via indirect Surface-enhanced Raman scattering

Tolga Zorlu^{1,3}, Monica Quarato², Miguel A. Correa-Duarte¹, Begoña Espiña², Laura Rodriguez-Lorenzo², Laura Salonen¹

¹Singular Center for Biomedical Research (CINBIO), Universidade de Vigo, 36310 Vigo, Spain; ²International Iberian Nanotechnology Laboratory - INL, Portugal; ³Institute of Inorganic Chemistry-Functional Materials, University of Vienna, Vienna A-1090, Austria

12:15pm - 12:30pm

Plexcitonic SERS tags: new opportunities for ultrasensitive biosensing and bioimaging

isabel pastoriza-santos

Universidade de Vigo, Spain

12:30pm - 12:45pm

Plasmonic Supercrystals in Microfluidics Devices: Enabling Ultra-Sensitive SERS Detection.

Daniel García-Lojo^{1,2}, Jorge Pérez-Juste^{1,2}, Isabel Pastoriza-Santos^{1,2}

¹CINBIO, Universidade de Vigo, Spain; ²Galicía Suer Health Research Institute, SERGAS-UVIGO, Spain

12:45pm - 1:00pm

Nanogap-containing core-shell-like plasmonic nanostructures for precise and sensitive detection of pesticides via SERS spectroscopy

Aleksandra Szymańska^{1,2}, Agata Królikowska¹

¹Faculty of Chemistry, University of Warsaw, Poland; ²Faculty of Physics, University of Warsaw, Poland

Plenary

Wednesday, 31/July/2024

Session Chair: **Dongho Kim**

Location: **Aula Magna**

2:15pm - 3:00pm

Novel approaches to broadband coherent Raman microscopy

Giulio Cerullo

Politecnico di Milano, Italy

SERS Detection and Imaging at Extreme Limits

Wednesday, 31/July/2024

Session Chair: **Zac Schultz**

Location: **Aula Magna**

3:15pm - 3:45pm

Super-Resolution Spectral SERS Imaging

Zachary D. Schultz, Deben N. Shoup, Brian T. Scarpitti, Sanjun Fan, Abigail E. Smith

The Ohio State University, United States of America

3:45pm - 4:05pm

Advancing Electrochemical SERS Using Screen-Printed Electrodes

Christa Brosseau, Maddison Eisnor, Mary Stackaruk, Sumayyah Chotoye

Saint Mary's University, Canada

4:05pm - 4:20pm

Optimisation and Characterisation of Ultrabright Nanotags for Surface-Enhanced Raman Scattering (SERS)

Ruairi Carland¹, Karen Faulds¹, Duncan Graham¹, Neil Shand²

¹University of Strathclyde, United Kingdom; ²Defence Science and Technology Laboratory, Salisbury

4:20pm - 4:35pm

Peculiarities of using different nanostructures for surface-enhanced Raman scattering

István Csarnovics

University of Debrecen, Hungary

Theory and Computation: General

Wednesday, 31/July/2024

Session Chair: **Chiara Cappelli**

Location: **Cabibbo (Fermi)**

3:15pm - 3:30pm

On the Measurements of Surface Enhanced Raman Scattering Spectrum

Yiping Zhao

University of Georgia, United States of America

3:30pm - 3:45pm

Ab initio modeling of Time-Dependent Raman and Surface Enhanced Raman Scattering

Giulia Dall'Osto¹, Stefano Corni^{1,2}

¹Dipartimento di Scienze Chimiche, Università di Padova, via F. Marzolo 1, 35131, Padova, Italy; ²Istituto Nanoscienze-CNR, via Campi 213/A, 41125, Modena, Italy

3:45pm - 4:00pm

First-principles density functional theory calculation of vibrational resonant Raman spectra in large semiconducting and metallic systems

Stefano Paolo Villani¹, Paolo Barone², Francesco Mauri¹

¹Sapienza University of Rome, Italy; ²CNR-SPIN

4:00pm - 4:15pm

Accurate Predictions of Raman and Raman Optical Activity Spectra: Recent Progresses and Challenges

Julien Bloino¹, Qin Yang², Petr Bouř²

¹Scuola Normale Superiore, Italy; ²Institute of Organic Chemistry and Biochemistry, Czech Academy of Sciences, Czech Republic

4:15pm - 4:30pm

Combined theoretical and experimental approach for assessment of fine-grain vibrational information in SERS

Dusan Hemzal, Vit Pavelka, Jan Hrbac

Masaryk University, Czech Republic

Live-cell Raman Imaging

Wednesday, 31/July/2024

Session Chair: **hideaki kano**
Location: **Ginestra (Chemistry)**

3:15pm - 3:45pm

CARS Spectroscopic Imaging Using a >50-ps Supercontinuum Light Source

Hideaki Kano

Kyushu University, Japan

3:45pm - 4:05pm

Raman Imaging Reveals a Novel Membrane Component in the Sporangium Wall of a Rare Actinomycete

Shinsuke Shigetou

Kwansei Gakuin University, Japan

4:05pm - 4:20pm

Monitoring cellular interactions in Organ-on-Chip models through Raman spectroscopy and multimodal imaging

Julia Marzi^{1,2}, Julia Alber², Sally Williamson², Emanuel Behling¹, Peter Loskill^{2,3}, Katja Schenke-Layland^{1,2}

¹Department for Medical Technologies & Regenerative Medicine, Institute of Biomedical Engineering, University of Tübingen, Germany; ²NMI Natural and Medical Sciences Institute at the University of Tübingen, Reutlingen, Germany; ³Department for Microphysiological Systems, Institute of Biomedical Engineering, University of Tübingen, Germany

4:20pm - 4:35pm

Combined Raman Spectroscopy and Holo-Tomography Uncover First Morpho-Molecular Developmental Dynamics in Living Embryonic Colonies

Arianna Bresci^{1,2}, Salvatore Sorrentino², Koseki J. Kobayashi-Kirschvink^{1,3}, Renzo Vanna⁴, Giulio Cerullo^{2,4}, Peter T. C. So^{1,5,6}, Dario Polli^{2,4}, Jeon Woong Kang¹

¹Massachusetts Institute of Technology, G. R. Harrison Spectroscopy Laboratory, Cambridge, MA, 02139, USA; ²Politecnico di Milano, Department of Physics, Milan, 20133, Italy; ³Broad Institute of MIT and Harvard, Cambridge, MA, 02142, USA; ⁴CNR Institute for Photonics and Nanotechnology, Milan, 20133, Italy; ⁵Massachusetts Institute of Technology, Department of Mechanical Engineering, Cambridge, MA, 02139, USA; ⁶Massachusetts Institute of Technology, Department of Biological Engineering, Cambridge, MA, 02139, USA

Novel Approaches: General I

Wednesday, 31/July/2024

Session Chair: **Bhavya Sharma**

Location: **Conversi (Marconi)**

3:15pm - 3:30pm

Mechano-Raman spectroscopy

Weiqao Xu

Nanjing University, People's Republic of China

3:30pm - 3:45pm

OPEN-SOURCE FOR RAMAN SPECTROSCOPY HARMONISATION

Georgi Georgiev^{1,2}, Dirk Lelinger³, Luchesar Iliev¹, Evgeniy Marinov¹, Vedrin Jeliakov¹, Nicolás Coca-López⁴, Miguel Angel Bañares⁴, Raquel Portela⁴, Nina Jeliakov¹

¹Ideaconsult Ltd, Sofia, Bulgaria; ²Institute for Nuclear Research and Nuclear Energy, Bulgarian Academy of Science; ³Fraunhofer LBF, Plastics Division, Schloßgartenstraße 6, 64289 Darmstadt, Germany; ⁴CSIC, Institute for Catalysis, Marie Curie 2, E-28049-Madrid, Spain

3:45pm - 4:00pm

Raman Base: it's high time for revolution in handling and sharing of Raman-spectroscopic data

Zdeněk Pilát, Ondřej Doskočil, Filip Plešinger, Darya Zhurauliova, Ota Samek, Pavel Zemánek

Institute of Scientific Instruments of the Czech Academy of Sciences, Czech Republic

4:00pm - 4:15pm

Raman Diffusion-Ordered Spectroscopy

Robert Schmidt^{1,2}, Giulia Giubertoni², Federico Caporaletti^{2,3}, Paul Kolpakov², Noushine Shahidzadeh², Freek Arie¹, Sander Woutersen²

¹LaserLaB, Physics and Astronomy, Vrije Universiteit Amsterdam, The Netherlands; ²Van 't Hoff Institute for Molecular Sciences, University of

Amsterdam, The Netherlands; ³Université Libre de Bruxelles, Av. Franklin Roosevelt 50, 1050 Bruxelles, Belgium

4:15pm - 4:30pm

Background-free Raman spectroscopic measurements enabled by tailor-made dual-wavelength diode lasers

André Müller, Martin Maiwald, Bernd Sumpf

Ferdinand-Braun-Institut, Germany

Raman Metrology I

Wednesday, 31/July/2024

Session Chair: **Angela R. Hight Walker**

Location: **Aula 3 (Fermi)**

3:15pm - 3:45pm

Novel Instrumentation for 2D Characterization: Combined Magneto-Optical Magneto-Transport

Maria Munoz¹, Thuc Mai¹, Son Le^{1,2}, Curt Richter¹, Aubrey Hanbicki², Adam Friedman², Yufei Li³, Rolando Valdes Aguilar³, Angela R. Hight Walker¹

¹National Institute of Standards and Technology (NIST), United States of America; ²Laboratory for Physical Sciences (LPS), United States of America; ³The Ohio State University (OSU), United States of America

3:45pm - 4:00pm

Accurate wavenumber and intensity calibration for standardization of Raman spectroscopy

Ankit Raji^{1,2}, Henryk A Witek², Hiro-o Hamaguchi²

¹Gakushuin University, Japan; ²National Yang Ming Chiao Tung University, Hsinchu, Taiwan

4:00pm - 4:15pm

Semiconducting Nanowires for Metrological Evaluation of Spatial Resolution in Raman Microscopy

Sebastian Wood¹, Maxim Shkunov², Fernando A Castro^{1,2}

¹National Physical Laboratory, Teddington, Middlesex, UK; ²Advanced Technology Institute, Faculty of Engineering, University of Surrey, Guildford, UK

4:15pm - 4:30pm

Verification of Si Wafer First-order Phonon Peaks for Reliable Calibration of Raman Microscopes

Nobuyasu Itoh

National Institute of Advanced Industrial Science and Technology (AIST/NMIJ), Japan

Structure and Function of Proteins I

Wednesday, 31/July/2024

Session Chair: **Giulietta Smulevich**

Location: **Amaldi (Marconi)**

3:15pm - 3:45pm

Porphyrin metalation mechanism by ferrochelatase in gram-positive pathogenic bacteria

Andrea Dali¹, Federico Sebastiani¹, Thomas Gabler², Paul G. Furtmüller², Maurizio Becucci¹, Stefan Hofbauer², Giulietta Smulevich¹

¹Department of Chemistry "Ugo Schiff" (DICUS), Università degli studi di Firenze, Italy; ²Department of Chemistry, Institute of Biochemistry, University of Natural Resources and Life Science (Vienna, Austria)

3:45pm - 4:05pm

Deep UV Resonance Raman spectroscopy as potential tool for molecular investigation of biomolecules

Barbara Rossi

Elettra Sincrotrone Trieste, Italy

4:05pm - 4:20pm

Understanding [NiFe] Hydrogenases by Resonance Raman Spectroscopy

Cornelius Bernitzky¹, Christian Lorent², Ingo Zebger², Peter Hildebrandt², Marius Horch¹

¹Freie Universität Berlin, Germany; ²Technische Universität Berlin, Germany

4:20pm - 4:35pm

Revealing novel structural and functional features of iron-sulfur clusters in proteins by (SE)RR spectroscopy

Smilja Todorovic¹, Ines A. Cardoso Pereira¹, Joanna Timmins², Vladimir Pelmentschikov³, Elin Moe¹

¹ITQB-NOVA Universidade Nova de Lisboa, Portugal; ²University of Grenoble Alpes, CEA, CNRS, IBS, Grenoble, France; ³Institut für Chemie, Technische Universität Berlin, Berlin, Germany

Operando Raman III

Wednesday, 31/July/2024

Session Chair: Zee Hwan Kim

Location: Aula A (Chemistry)

3:15pm - 3:30pm

Exploring the co-aggregation of β -lactoglobulin and albumin whey proteins using a spectroscopic approach

Sara Venturi¹, Barbara Rossi², Fatima Matroodi^{2,3}, Renato Torre^{1,4}, Andrea Lapini^{1,5}, Paolo Foggi^{1,6,7}, Paola Sassi^{1,6,7}, Marco Paolantoni⁶, Sara Catalini^{1,7,8}

¹European Laboratory for Non-Linear Spectroscopy LENS, University of Florence, Italy; ²Elettra-Sincrotrone Trieste, Basovizza, Italy; ³Department of Physics, Shahid Chamran university of Ahvaz, Iran; ⁴Department of Physics and Astronomy, University of Florence, Italy; ⁵Department of Chemical Science, Life and Environmental Sustainability, University of Parma, Italy; ⁶Department of Chemistry, Biology and Biotechnology, University of Perugia, Italy; ⁷CNR-INO, National Research Council-National Institute of Optics, Florence, Italy; ⁸Department of Physics and Geology, University of Perugia, Italy

3:30pm - 3:45pm

Vibrational effects in Metal Organic Frameworks induced by CO₂ uptake

Athanassios G. Kontos^{1,3}, Pinelopi P. Falara^{2,3}, Rופן Vartian¹, Dimitrios Palle⁴, George Em. Romanos³, Theodore A. Steriotis³, Pantelis N. Trikalitis⁵, Giasemi K. Angeli^{4,5}, Yannis S. Raptis¹

¹School of Applied Mathematical and Physical Sciences, National Technical University of Athens, Greece; ²School of Chemical Engineering, National Technical University of Athens; ³Institute of Nanoscience and Nanotechnology, National Centre for Scientific Research "Demokritos"; ⁴Theoretical and Physical Chemistry Institute, National Hellenic Research Foundation; ⁵Department of Chemistry, University of Crete

3:45pm - 4:00pm

High-Pressure Raman Investigations of AuSn₄ and its Chemical Pressure Equivalent PtSn₄: Structural Transitions, Stability, and Superconductivity Insights

SATHEASUWEATHA MARIMUTHU NIRMALA DEVI

Elettra sincrotrone, Italy

4:00pm - 4:15pm

The Role of Structural Flexibility in Plasmon-Driven Coupling Reactions: A SERS investigation

Wouter Koopman¹, Radwan Sarhan², Robin Schürmann³, Evgenii Titov¹, Felix Stete¹, Peter Saalfrank¹, Ilko Bald¹, Matias Bargheer^{1,2}

¹University of Potsdam, Germany; ²Helmholtz-Zentrum Berlin, Germany; ³Physikalisch Technische Bundesanstalt, Germany

Postdeadline Hot Topics

Wednesday, 31/July/2024

Session Chair: Georgina Ellen Shillito

Location: Aula 4 (Fermi)

3:15pm - 3:35pm

Controlling Excited State Localisation in Bichromophoric Photosensitizers via the Bridging Group

Georgina E. Shillito¹, Samuel J. Harris², Keith C. Gordon², Stephan Kupfer¹

¹Friedrich Schiller University Jena, Germany; ²University of Otago, New Zealand

3:35pm - 3:55pm

Realtime tracking of femtosecond vibrational dynamics in liquid water

Gaia Giovannetti¹, Sergey Ryabchuk^{2,3}, Ammar bin Wahid¹, Hui-Yuan Chen⁴, Giovanni Batignani⁵, Erik Peter Maanson¹, Andrea Trabattoni^{1,6}, Ofer Neufeld¹, Angel Rubio¹, Vincent Wanie¹, Hugo Marroux⁷, Tullio Scopigno⁵, Majed Chergui⁴, Francesca Calegari^{1,2,3}

¹Center for Free-Electron Laser Science, Deutsches Elektronen-Synchrotron DESY, Notkestr. 85, 22607 Hamburg, Germany; ²Physics Department, University of Hamburg, Luruper Chaussee 149, 22761 Hamburg, Germany; ³The Hamburg Centre for Ultrafast Imaging, Universität Hamburg, 22761 Hamburg, Germany; ⁴Ecole Polytechnique Fédérale de Lausanne, Rte Cantonale, 1015 Lausanne, Switzerland; ⁵Sapienza University of Rome, Physics Department,

Piazzale Aldo Moro 5, 00185 Rome, Italy; ⁶Institute of Quantum Optics, Leibniz Universität Hannover, Welfengarten 1, 30167 Hannover, Germany; ⁷Laboratoire Interactions, Dynamiques et Lasers, CEA-Saclay, 91191 Gif-sur-Yvette, France

3:55pm - 4:15pm

Retrieving Genuine Nonlinear Raman Responses in Ultrafast Spectroscopy via Deep Learning

Giuseppe Fumero¹, Giovanni Batignani^{1,2}, Edoardo Cassetta¹, Carino Ferrante^{1,3}, Stefano Giagu¹, Tullio Scopigno^{1,2,4}

¹Dipartimento di Fisica, Sapienza Università di Roma, Roma, Italy; ²Istituto Italiano di Tecnologia, Center for Life Nano Science @Sapienza, Roma, Italy; ³CNR-SPIN c/o Dipartimento di Scienze Fisiche e Chimiche, Università dell'Aquila, L'Aquila, Italy; ⁴Istituto Italiano di Tecnologia, Graphene Labs, Genova, Italy

4:15pm - 4:35pm

Sideband Raman Cooling of Optical Phonon in Semiconductors

Jun Zhang

Institute of Semiconductors, CAS, China, People's Republic of

SERS, TERS, and Plasmonics: Nanoscopic Raman

Wednesday, 31/July/2024

Session Chair: Volker Deckert

Location: Aula Magna

5:00pm - 5:30pm

Tips, Fields and Molecules

Volker Deckert^{1,2}

¹Leibniz IPHT, Germany; ²Friedrich-Schiller University, Jena

5:30pm - 5:50pm

Proving Non-Thermal Plasmon Catalysis Mechanism Though Anti-Stokes SERS Spectroscopy

Zee Hwan Kim

Seoul National University, Korea, Republic of (South Korea)

5:50pm - 6:10pm

TERS enhancement and 'quenching'

Tim Parker, Felix Schneider, Liangxuan Wang, David Baschnagel, Eric Juriatti, Philipp Haizmann, Thomas Chassé, Heiko Peisert, Alfred J. Meixner, Dai Zhang

Eberhard Karls University of Tübingen, Germany

6:10pm - 6:25pm

Amplified plasmonic forces from DNA-origami scaffolded single-dyes in nanogaps

Sara Rocchetti¹, Alexander Ohmann¹, Rohit Chikkaraddy², Gyeongwon Kang³, Ulrich Keyser¹, Jeremy Baumberg¹

¹University of Cambridge, United Kingdom; ²School of Physics and Astronomy University of Birmingham; ³Kangwon National University

6:25pm - 6:40pm

Investigation of selection rules in tip-enhanced Raman spectroscopy using anisotropic materials

Yuto Fujita^{1,2}, Norihiko Hayazawa², Maria Vanessa Balois-Oguchi², Takuo Tanaka², Tomoko K. Shimizu¹

¹Keio University, Japan; ²RIKEN, Japan

6:40pm - 6:55pm

Biochemical surface characterization of virions using Tip-enhanced Raman spectroscopy

Tanveer Ahmed Shaik¹, Savelii Filipkov¹, Franziska Hornung³, Tanja Deckert-Gaudig², Stefanie Deinhardt-Emmer³, Volker Deckert^{1,3}

¹Friedrich Schiller University Jena, Institute of Physical Chemistry and Abbe Center of Photonics, Jena, Germany.; ²Leibniz Institute of Photonic Technology, Jena, Germany.; ³Institute of Medical Microbiology, Jena University Hospital, Jena, Germany.

Non-Linear and Time Resolved: Excited-state Dynamics I

Wednesday, 31/July/2024

Session Chair: Tullio Scopigno

Location: Cabibbo (Fermi)

5:00pm - 5:30pm

Chirped-impulsive Raman spectroscopy

Tullio Scopigno

Università "Sapienza" Roma, Italy

5:30pm - 5:50pm

Structural Evolutions in the Excited State of Slip-Stacked Perylene Dye Array probed by Time-resolved Impulsive Stimulated Raman Spectroscopy

Dongho Kim

Yonsei University, Korea, Republic of (South Korea)

5:50pm - 6:10pm

Probing the Dynamics of Molecular Switches using Ground- and Excited-State Resonance Raman Spectroscopy

Kristen H. Burns, Katie E. White, Emmaline R.

Lorenzo, Christopher G. Elles

Department of Chemistry, University of Kansas, Lawrence, Kansas, United States of America

6:10pm - 6:25pm

Vibrational Spectrum of Excited State Following Ultrafast Internal Conversion Through Conical Intersection

Taiha Joo

Pohang University of Science and Technology (POSTECH), Korea, Republic of (South Korea)

6:25pm - 6:40pm

Structural changes of chromophores upon intramolecular charge transfer in the excited states

Sebok Lee, Jang Taehyung, Im Jongwon, Yoonsoo Pang

Department of Chemistry, Gwangju Institute of Science and Technology, Korea, Republic of (South Korea)

6:40pm - 6:55pm

Time-resolved resonance Raman spectroscopy reveals the mechanism of the water oxidation catalyst Ru-hbpb

Elizaveta Kobeleva¹, Maximilian Schütze², Kallol Ray², Marcus Weber³, Marius Horch¹

¹Free University Berlin, Germany; ²Humboldt University Berlin, Germany; ³Zuse Institute Berlin, Berlin, Germany

6:55pm - 7:10pm

Time-Domain Raman Spectroscopy: Encoding the temporal information in the spectral Domain via chirped pulses

Giovanni Batignani, Assia Mariani, Emanuele Mai, Miles Martinati, Tullio Scopigno

Sapienza Università di Roma, Italy

Coherent Raman Imaging III

Wednesday, 31/July/2024

Session Chair: Herve Rigneault

Location: Ginestra (Chemistry)

5:00pm - 5:30pm

Recent developments in coherent Raman imaging

Herve Rigneault

Institut Fresnel - CNRS - Aix Marseille Univ, France

5:30pm - 5:50pm

Stimulated Raman scattering imaging of single cell drug exposure and drug response

Dan Fu

University of Washington, United States of America

5:50pm - 6:10pm

Advances of stimulated Raman scattering microscopy with novel light sources and Raman probes

Yasuyuki Ozeki

The University of Tokyo, Japan

6:10pm - 6:30pm

Fast and few: high-speed compressive Raman imaging

Hilton Barbosa de Aguiar

Laboratoire Kastler Brossel - Ecole Normale Supérieure/Paris, France

6:30pm - 6:45pm

Polymer, Water and Salt Concentration in Complex Coacervates determined by Femtosecond Stimulated Raman Microscopy (FSRM)

Francisco van Riel Neto, Carolin Borbeck, Peter Gilch

Heinrich Heine University Düsseldorf, Germany

6:45pm - 7:00pm

A plug-and-play broadband coherent Raman platform

Francesco Crisafi¹, Benedetta Talone¹, Andrea Ragni¹, Gabriele Di Noia¹, Federico Monti¹, Mujeeb Rahman², Eleonora Erriquez¹, Tiago Azevedo³, Junwei Yang³, Moe Vali⁴, Ivo Petrov³, Renzo Vanna⁵, David Pertzborn⁶, Anna Mühlhig⁶, Franziska Hoffmann⁶, Orlando Guntinas-Lichius⁶, Pietro Liò³, Andrea C. Ferrari⁷, Giulio Cerullo⁸, Matteo Negro¹

¹Cambridge Raman Imaging Srl, Via Durando 39, 20158, Milan, Italy; ²Cambridge Raman Imaging Ltd, Botanic House, 100 Hills Road, Cambridge, Cambridgeshire, CB2 1PH, United Kingdom; ³Department of Computer Science and Technology, University of Cambridge, Cambridge, UK; ⁴Department of Physics, University of Cambridge, Cambridge, UK; ⁵CNR IFN, P.zza Leonardo da Vinci 32, 20133, Milan, Italy; ⁶Jena University Hospital, Am Klinikum 1, 07747 Jena, Germany; ⁷Cambridge Graphene Centre, University of Cambridge, Cambridge, CB3 0FA, UK; ⁸Politecnico di Milano, Dipartimento di Fisica, P.zza Leonardo da Vinci 32, 20133, Milan, Italy

7:00pm - 7:15pm

Multimodal imaging analysis using Stimulated Raman Scattering Microscopy and Secondary Ion Mass spectrometry to study drug penetration into skin

Vasundhara Tyagi¹, Jean-Luc Vorng¹, Alex Dexter¹, Panagiota Zarmpi², Natalie Belsey^{1,3}, Dimitrios Tsikritsis¹, Begona Delgado-Charro², Richard Guy²

¹Chemical & Biological Science Department, National Physical Laboratory, Teddington, TW11 0LW, UK.; ²Department of Life Sciences, University of Bath, BA2 7AY, UK.; ³School of Chemistry & Chemical Engineering, University of Surrey, Guildford, GU2 7XH, UK.

7:15pm - 7:30pm

Spectral focusing SRS microscopic analysis of pharmaceutical co-crystallization

Alba Arbiol, Oona Auvinen, Elina Harju, Teemu Tomberg, Lea Wurr, Leena Peltonen, Clare Strachan, Jukka Kalle Samuel Saarinen

Division of Pharmaceutical Chemistry and Technology, Faculty of Pharmacy, University of Helsinki, Finland

Novel Approaches: General II

Wednesday, 31/July/2024

Session Chair: Benjamin Gardner

Location: Conversi (Marconi)

5:00pm - 5:15pm

Droplet deposition Raman spectroscopy: its aspects and potential applications

Eva Kocisova, Alzbeta Kuizova, Marek Prochazka

Charles University, Faculty of Mathematics and Physics, Czech Republic

5:15pm - 5:30pm

Experimental assignment of glycosaminoglycan vibrational bands

Gergo Peter Szekeres^{1,2}, Jan Horlebein², Jerome Riedel^{1,2}, Gert von Helden², Kevin Pagel^{1,2}

¹Freie Universität Berlin, Germany; ²Fritz-Haber-Institut der Max-Planck-Gesellschaft, Germany

5:30pm - 5:45pm

New spike removal algorithms for Raman spectroscopy: A comparative approach based on synthetic spectra

Nicolas Coca-Lopez¹, Georgi Georgiev², Miguel A. Bañares¹, Raquel Portela¹

¹Instituto de Catalisis y Petroleoquímica (ICP), CSIC; ²Institute for Nuclear Research and Nuclear Energy, Bulgarian Academy of Sciences, BG

5:45pm - 6:00pm

In vivo Resonant Raman microscopy study of Artemia salina (Linnaeus, 1758); carotenoids profile as proxy for variability in environmental conditions

Karlo Maškarić^{1,2}, Csilla Müller Molnár^{1,3}, Ion Nesterovschi^{1,2}, Fran Nekvapil³, Simona Cîntă Pinzaru^{1,2}

¹Biomolecular Physics Department, Kogălniceanu 1, RO-400084, Cluj Napoca, Romania; ²Institute for Research, Development and Innovation in Applied Natural Sciences, Babes-Bolyai University, Fantanele 30, 400327 Cluj-Napoca, Romania; ³National Institute for Research and Development of Isotopic and Molecular Technologies, 67-103 Donath, 400293 Cluj-Napoca, Romania

6:00pm - 6:15pm

Exploring thermotropic phase transition of dried phospholipids by droplet deposition Raman spectroscopy

Alžbeta Kůžová, Václav Profant, Eva Kočíšová
Charles University, Faculty of Mathematics and Physics, Czech Republic

6:15pm - 6:30pm

Inkjet-Printed SERS Substrate for Multiplex Detection and Quantification of Biorelevant VOCs

Jorge Pérez-Juste
University of Vigo, Spain

6:30pm - 6:45pm

Deciphering the molecular pH-gating mechanism of bacterial urea channels utilizing a novel Raman Spectroscopy approach

Sandra Posch¹, Christian Angerer², Felix Wolkenstein¹, Xenia Fischer¹, Anna Stoib¹, Nikolaus Gössweiner-Mohr¹, Verena Karl³, Sahar Shojaei¹, Sabine Hild², Andreas Horner¹
¹Johannes Kepler University Linz - Institute of Biophysics, Austria; ²Johannes Kepler University Linz - Institute of Polymer Science, Austria; ³RECENDT GmbH, Austria

6:45pm - 7:00pm

Mapping Selenium Nanoparticles Distribution in-vitro through Confocal Raman Microspectroscopy

Davide Redolfi-Bristol^{1,2}, Kenta Yamamoto³, Wenliang Zhu², Osam Mazda³, Pietro Riello¹, Elia Marin², Giuseppe Pezzotti^{1,2,3}
¹Università Ca' Foscari Venezia, Italy; ²Kyoto Institute of Technology, Japan; ³Kyoto Prefectural University of Medicine, Japan

Raman Metrology II

Wednesday, 31/July/2024

Session Chair: Raquel Portela

Location: Aula 3 (Fermi)

5:00pm - 5:20pm

RAMAN DATA HARMONISATION

Raquel Portela¹, Enrique Lozano Diz², Nina Jeliakova³, Dirk Lellingner⁴, Nicolas Coca-Lopez¹, José F. Fernández⁵, Miguel A. Bañares¹
¹CSIC, Instituto de Catalisis y Petroleoquímica (ICP), Spain; ²ELODIZ Ltd., UK; ³IDEAconsult Ltd., Bulgaria; ⁴Fraunhofer LBF, Division Plastics, Germany; ⁵CSIC, Instituto de Cerámica y Vidrio (ICV), Spain

5:20pm - 5:35pm

Exploring beam profile effects in Raman spectroscopy

Dimitrios Tsikritsis¹, Keith R. Paton¹, Nicolas Coca-Lopez², Raquel Portela³, Miguel A. Bañares³, Natalie A. Belsey^{1,2}
¹National Physical Laboratory, Hampton Road, Teddington, TW1 0LW, UK; ²University of Surrey, Guildford, GU2 7XH, UK; ³Instituto de Catalisis y Petroleoquímica (ICP), CSIC, Marie Curie, 2, Madrid, 28049, Spain

5:35pm - 5:50pm

Super-Spectral-Resolution Raman Spectroscopy using angle tuning of a Fabry-Perot Interferometer with Applications to Diamond Identification

Yishai Amiel¹, Romi Nedvedski², Yaakov Mandelbaum¹, Yaakov Raphael Tischler², **Hadass Tischler**¹
¹Jerusalem College of Technology, Israel; ²Bar-Ilan University, Israel

5:50pm - 6:05pm

Angle-Resolved Polarized Raman Methodology for Determining Lattice Plane Orientation of 2D Materials

Tehseen Adel¹, **Riccardo Torsi**¹, Maria Munoz¹, Thuc T. Mai¹, Charlezetta E. Stokes^{1,2}, Aurélien Thieffry³, Angela R. Hight Walker¹
¹National Institute of Standards and Technology, Gaithersburg, MD, United States of America; ²Howard University, Washington, DC; ³HORIBA France, Lille, Hauts-de-France, France

6:05pm - 6:20pm

Transfer of Raman data, not a simple task!

Enrique Lozano Diz, James Thomson
elodiz ltd, United Kingdom

6:20pm - 6:35pm

New Microspectral and Laser Engineering Solutions for Nanometer Optical Measurements

Dmitry Kozodaev, Evgeny Kuznecov, Mihail Trusov, Aleksey Kazankov, Andrey Pogonyshv, **Nikita Tolkach**

NT-MDT BV, Sutton 11A, 7327 AB Apeldoorn, Netherlands

Pharmaceutical Applications I

Wednesday, 31/July/2024

Session Chair: Keith Gordon

Location: Amaldi (Marconi)

5:00pm - 5:30pm

Low Frequency Raman Spectroscopy as a Method of Investigating Pharmaceutical Polymorphs

Keith Gordon
University of Otago, New Zealand

5:30pm - 5:50pm

Future Perspectives for Low-Frequency Raman Spectroscopy in Pharmaceutical Applications

Karlis Berzins¹, Ben J. Boyd^{1,2}
¹Department of Pharmacy, University of Copenhagen, Denmark; ²Monash Institute of Pharmaceutical Sciences, Monash University, Australia

5:50pm - 6:10pm

Coherent Raman imaging of complex solid-state profiles of pharmaceuticals

Elina Harju¹, Teemu Tomberg^{1,2}, Lea Wurr¹, Alba Arbiol¹, Antti Isomäki³, Jukka Saarinen¹, Heikki Rääkkönen¹, Niklas Johansson¹, **Keith Gordon**⁴, Bert van Veen⁵, **Clare Strachan**¹

¹Division of Pharmaceutical Chemistry and Technology, Faculty of Pharmacy, University of Helsinki, Finland; ²Department of Chemistry, Faculty of Science, University of Helsinki, Finland; ³Biomedicum Imaging Unit, Department of Anatomy, Faculty of Medicine, University of Helsinki, Finland; ⁴Department of Chemistry, University of Otago, New Zealand; ⁵Pharmaceutical Sciences, Orion Corporation, Finland

6:10pm - 6:30pm

Raman Spectroscopic Analysis of Biogenic Gases and Drug Target Interactions

Torsten Frosch
Technical University Darmstadt, Germany

6:30pm - 6:45pm

Raman spectroscopy methods for studying pharmaceutical multiparticulate and liposomal formulations

Elizabeth J Legge, Natalie A Belsey, Caterina Minelli
National Physical Laboratory, Teddington TW11 0LW, U.K

6:45pm - 7:00pm

Spectroscopic, molecular properties and stability study of secondary metabolite- Natural Deep Eutectic solvent mixture

Gomti Devi Thongam
Manipur University, India

7:00pm - 7:15pm

Spectroscopic properties of agomelatine - loaded hydrogels

Ariadna B. Nowicka¹, Tobiasz Banaszek¹, Radostaw Wichniarek¹, Wiesław Kuczek¹, Dorota Tomczak¹, Monika Wojtytko², Anna Froelich², Barbara Jadach², Tomasz Osmałek², Mirosław Szybowski¹

¹Poznan University of Technology, Poland; ²Poznan University of Medical Sciences, Poland

7:15pm - 7:30pm

UV- and Fiber-Assisted Raman Spectroscopic Drug Monitoring

Timea Frosch¹, Christian Domes¹, Jürgen Popp¹, Torsten Frosch^{1,2}
¹Leibniz-Institute of Photonic Technology, Germany; ²Technical University Darmstadt, Germany

Materials III

Wednesday, 31/July/2024

Session Chair: Patryk Kusch

Location: Aula A (Chemistry)

5:00pm - 5:15pm

Raman Spectroscopy of 2D Transition Metal Dichalcogenides Interacting with Metals

Valeria Russo¹, Francesco Tumino^{1,2}, Paolo D'Agosta¹, Sergio Tosoni³, Carlo S. Casari¹, Andrea Li Bassi¹

¹Department of Energy, Politecnico di Milano, Italy; ²Department of Physics, Engineering Physics and Astronomy, Queen's University, Kingston ON, Canada; ³Department of Materials Science, Università di Milano-Bicocca, Italy

5:15pm - 5:30pm

Study of the performances of colloidal and solid SERS substrates made up of PDA-coated silver and gold nano-objects

Pietro Galinetto¹, Benedetta Albini¹, Maddalena Patrini¹, Serena Schiavi², Angelo Taglietti²

¹Dipartimento di Fisica, Università di Pavia, Italy; ²Dipartimento di Chimica, Università di Pavia, Italy

5:30pm - 5:45pm

Determining the Crystal Orientation of TMDs by Angular-Resolved Second-Harmonic Generation

Lucas Lafeta¹, Sean Hartmann¹, Bárbara Rosa², Stephan Reitzenstein², Leandro Malard³, Achim Hartschuh¹

¹Department of Chemistry and Center for NanoScience (CeNS), University of Munich – LMU, Butenandtstraße 5-13, 81377 Munich, Germany; ²Institute of Solid State Physics, Technische Universität Berlin, 10623 Berlin, Germany; ³Departamento de Física, Universidade Federal de Minas Gerais, Belo Horizonte, Minas Gerais 30123-970, Brazil

5:45pm - 6:00pm

Surface Resonant Raman Scattering from Cu(110)

Mariella Denk¹, Eugen Speiser², Julian Plaickner^{2,3}, Sandhya Chandola^{2,3}, Simone Sanna⁴, Peter Zeppenfeld¹, Norbert Esser^{2,5}

¹Johannes Kepler University Linz, Austria; ²Leibniz-Institut für Analytische Wissenschaften – ISAS – e.V. Berlin, Germany; ³Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Germany; ⁴Institut für Theoretische Physik and Center for Materials Research Gießen, Germany; ⁵Technische Universität Berlin, Germany

6:00pm - 6:15pm

Superlattice nanowires: a versatile platform for phonon engineering

Aswathi Kanjampurath Sivan¹, Begoña Abad¹, Omer Arif², Johannes Trautvetter³, Tommaso Albrigi³, Alicia Ruiz Caridad¹, Chaitanya Arya¹, Diego De Matteis¹, Francesca Rossi⁴, Valentina Zannier², Lucia Zorba², Riccardo Rurali³, Iliaria Zardo¹

¹Department of Physics, University of Basel, Switzerland; ²NEST, Istituto Nanoscienze-CNR and Scuola Normale Superiore, Pisa, Italy; ³Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Spain; ⁴IMEM—CNR, Parco Area delle Scienze 37/A, I-43124 Parma, Italy

6:15pm - 6:30pm

Raman studies from InAs/GaAs-Sb Quantum Dot Heterostructures

Sudip Kumar Deb¹, Priyesh Kumar², Jhuma Saha²

¹IIT Bombay, India; ²IIT Gandhinagar, India

6:30pm - 6:45pm

The Interaction between Fluorescent Molecules and Plasmonic Nanoparticles: From SERS to SEF

Anna Mercedi, Lucio Litti

Department of Chemical Sciences, University of Padova, Italy

6:45pm - 7:00pm

Nanoscale Chemical Analysis of Thin Film Solar Cell Interfaces using Tip-Enhanced Raman Spectroscopy

Siiri Bienz¹, Giulia Spaggiari^{2,3}, Davide Calestani³, Giovanna Trevisi³, Danilo Bersani², Renato Zenobi¹, Naresh Kumar¹

¹ETH Zurich, Switzerland; ²University of Parma, Italy; ³CNR-IMEM, Italy

7:00pm - 7:15pm

Raman Spectroscopy Unlocks the Unique Vibrational and Electronic Properties of Linear Carbon Atomic Wires

Simone Melesi¹, Sonia Peggiani¹, Pietro Marabotti^{1,4}, Valeria Russo¹, Barbara Rossi³, Matteo Tommasini², Chiara Castiglioni², Andrea Li Bassi¹, Carlo S. Casari¹

¹Dept. of Energy, Politecnico di Milano, Italy; ²Dept. of Chemistry, Materials and Chem Eng. Politecnico di Milano, Italy; ³Elettra Sincrotrone Trieste, Italy; ⁴Institut für Physik, Humboldt Universität zu Berlin, Germany;

Location: Aula 4 (Fermi)

5:00pm - 5:30pm

SERS-based Assay Platforms for Rapid and Accurate Diagnosis of Infectious Diseases

Younju Joung, Kihyun Kim, Sohyun Park, Jaebum Choo

Chung-Ang University, Korea, Republic of (South Korea)

5:30pm - 5:50pm

Sensitive and Selective Bioanalysis using SERS

Karen Faulds

University of Strathclyde, United Kingdom

5:50pm - 6:10pm

Plasmonic nanopores for single-molecule Raman sequencing

Yingqi Zhao¹, Jianan Huang¹, Francesco De Angelis²

¹University of Oulu, Finland; ²Istituto Italiano di Tecnologia, Italy

6:10pm - 6:25pm

SERS Dipstick Assay for Simultaneous Multiplex Subtyping of Breast Cancer Derived Small Extracellular Vesicles

Chloe Anne Duffield¹, Laura Rey Gomez¹, David Inglis², Yuling Wang¹

¹School of Natural Sciences, Faculty of science and engineering, Macquarie University, Sydney, NSW 2109, Australia; ²School of Engineering, Faculty of science and engineering, Macquarie University, Sydney, NSW 2109, Australia

6:25pm - 6:40pm

Applications of surface enhanced Raman scattering (SERS) spectroscopy for detection of DNA

Andrzej Kudelski

University of Warsaw, Poland

6:40pm - 6:55pm

SERS Biosensors for Early Diagnosis and Treatment Guidance in Plants

Pietro Strobbia

University of Cincinnati, United States of America

6:55pm - 7:10pm

Maximizing label-free SERS sensitivity and spectral resolution for therapeutic drug monitoring application: SPE prior to a lab-on-a-disc

Gohar Soufi^{1,2}, Isidro Badillo-Ramírez^{1,2}, Laura Seriola^{1,2}, Raheel Altaf Raja³, Kjeld Schmiegelow³, Kinga Zor^{1,2}, Anja Boisen^{1,2}

¹DTU, Denmark; ²BioInnovation Institute Foundation; ³Rigshospitalet University Hospital

7:10pm - 7:25pm

MULTISPECTRAL OPTICAL SENSOR FOR MONITORING PSYCHOLOGICAL STRESS

Victoria Barygina¹, Enrico Baria¹, Francesco Goretti², Elena Cravero³, Francesco Saverio Pavone^{1,2,4}

¹Department of Physics and Astronomy, University of Florence, Via Sansone, 1 - 50019 Sesto Fiorentino (FI), Italy; ²European Laboratory for Non-Linear Spectroscopy, Via Nello Carrara, 1, 50019 Sesto Fiorentino (FI), Italy; ³Campus Bio Medico University of Rome, Via Álvaro del Portillo, 21, 00128 Roma (RM); ⁴National Institute of Optics, National Research Council, Largo Enrico Fermi, 6, 50125 Firenze (FI), Italy

Thursday 01 August

Plenary

Thursday, 01/August/2024

Session Chair: Marco Leona

Location: Aula Magna

8:45am - 9:30am

The impact of Raman spectroscopy on the understanding of artists' materials and the preservation of works of art

Silvia Centeno

Metropolitan Museum of Art, United States of America

SERS, TERS, and Plasmonics: Sensors I

Thursday, 01/Aug/2024

Session Chair: Yaakov Raphael Tischler

Location: Aula Magna

SERS-based Biomedical Sensors I

Wednesday, 31/July/2024

Session Chair: Jaebum Choo

10:00am - 10:20am

Investigating the effect of proximity in a Gradient-SERS nano/micro-cavity device on the Raman signal intensity

Shira Zafran^{1,2}, Jacob D. Wolfman^{1,2}, Yağmur Reysi Kerse^{1,2}, Bruria Schmerling^{1,2}, Shai Rahimipour^{1,2}, Yaakov Raphael Tischler^{1,2}

¹Bar-Ilan Institute for Nanotechnology and Advanced Materials, Bar-Ilan University, Israel; ²Department of Chemistry, Bar-Ilan University, Israel

10:20am - 10:40am

New substrate for Organic Surface-Enhanced Raman Spectroscopy (OSERS): High Crystallinity Small Molecule Organic Semiconductor Single Crystal

Aiquo Shen

Wuhan Textile University, China, People's Republic of

10:40am - 11:00am

Excitation Wavelength Optimization for SERS: Enhancing Analytical Performance and Decoding the Molecular Electronic Structure Affected by Metallic Nanostructures

Sylwester Gawinkowski

Institute of Physical Chemistry, Polish Academy of Sciences, Warsaw, Poland

11:00am - 11:15am

High-Performance SERS Sensors with a Nanoparticle-on-Liquid-Mirror (NPolM) Nanophotonic Resonator Structure

Peter Qiang Liu

University at Buffalo, United States of America

11:15am - 11:30am

Surface enhanced Raman scattering of bioaerosols: where are we now?

Stefano Fornasaro¹, Sabrina Semeraro¹, Sabina Licen¹, Alois Bonifacio², Valter Sergio², Pierluigi Barbieri¹

¹University of Trieste, Department of Chemical and Pharmaceutical Sciences, via L. Giorgieri 1, 34127 Trieste, Italy; ²Raman Spectroscopy Lab, Dept. of Engineering and Architecture, University of Trieste, via A. Valerio 6a, 34127 Trieste, Italy

11:30am - 11:45am

On-site Surface Enhanced Raman Scattering detection of miRNAs by an automatized platform.

Chiara Novara, Alessandro Chiadò, Daniel Montesi, Sofia Bertone, Paola Rivolo, Francesco Geobaldo, Fabrizio Giorgis

Politecnico di Torino, Italy

Non-Linear Spectroscopy I

Thursday, 01/Aug/2024

Session Chair: Koichi Iwata

Location: Cabibbo (Fermi)

10:00am - 10:20am

Initial Collisions Promoting Bimolecular Chemical Reactions Examined with Picosecond Time-resolved Raman Spectroscopy

Yuki Otomo¹, Tomoki Marui¹, Shion Goryo¹, Masato Kondoh², Takaki Ishibashi², Koichi Iwata¹

¹Gakushuin University, Japan; ²University of Tsukuba, Japan

10:20am - 10:35am

Mechanism of vibrational energy transfer from OH stretch to OD stretch in H₂O/D₂O mixtures; the fs-IR pump-stimulated Raman probe study

Marcin Pastorczak¹, Alexei A. Kananenka², Michał Nejbauer¹, Katsiaryna Duk¹, Czesław Radzewicz³

¹Institute of Physical Chemistry Polish Academy of Sciences, Poland; ²Department of Physics and Astronomy, University of Delaware, United States; ³Institute of Experimental Physics, Faculty of Physics, University of Warsaw, Poland

10:35am - 10:50am

Measuring and mapping the interfacial thermal conductance of graphene/hBN by pump-probe microscopy

Daniilo Machado, Gabriel Bargas Melo, Frederico Barros de Sousa, Leonardo Campos, Leandro Malard

UFMG, Brazil

10:50am - 11:05am

Time-resolved Raman spectroscopy on bulk and monolayer MoS₂

Claudia Fasolato¹, Alice Finardi^{2,3}, Mattia Capecchia⁴, Andrea Giugni², Riccardo Cucini³, Giancarlo Panaccione³, Francesco Sacchetti^{3,5}, Paolo Postorino⁴, Caterina Petrillo^{5,6}, Giorgio Rossi^{2,3}

¹Institute for Complex Systems, National Research Council (CNR), Italy; ²Department of Physics, University of Milan, Italy; ³Istituto Officina dei Materiali, CNR, Italy; ⁴Department of Physics, Sapienza University, Italy; ⁵Department of Physics and Geology, University of Perugia, Italy; ⁶AREA Science Park, Italy

11:05am - 11:20am

Exploring phonon dynamic in germanium by time-resolved Raman spectroscopy

Grazia Raciti, Begoña Abad, Aswathi K. Sivan, Jose M. Sojo Gordillo, Ilaria Zardo

University of Basel, Switzerland

11:20am - 11:35am

Transient stimulated Raman scattering spectroscopy and imaging

Hanging Xiong

Peking University, China, People's Republic of

11:35am - 11:50am

Auger-assisted secondary hot carrier transfer in a type I MoS₂/PtSe₂ heterostructure probed by transient absorption spectroscopy and two-dimensional electronic spectroscopy

Jin Yang¹, Niu Xu¹, Christoph Lienau², Jin-Hui Zhong¹

¹Department of Materials Science and Engineering, Southern University of Science and Technology, Shenzhen 518055, China; ²Institut für Physik, Carl von Ossietzky Universität, Oldenburg 26129, Germany.

11:50am - 12:05pm

Atomic-Selective Impulsive Vibrational Spectroscopy Upon Core-Level Resonant Excitation

Oleg Dogadov¹, Remi Claude², Giuseppe Fumero³, Giovanni Batignani^{3,4}, Rebeca Castillo-Gomez⁵, Matteo Manzi⁵, Angelo Giglia⁶, Roberto Costantini^{6,7}, Dario De Angelis⁸, Ettore Paltanin⁸, Laura Foglia⁸, Marija Krstulovic⁹, Riccardo Mincigrucci⁸, Emiliano Principi⁸, Gabor Kurdi⁸, Miltcho Danailov⁸, Alberto Crepaldi¹, Tullio Scopigno^{3,4,9}, Giovanni De Ninno¹⁰, Claudio Masciovecchio⁸, Fabrizio Carbone^{2,5}, Michele Puppini⁵, Oliviero Cannelli^{5,11}

¹Dipartimento di Fisica, Politecnico di Milano, Piazza Leonardo da Vinci, 32, 20133 Milano, Italy; ²Laboratory for Ultrafast Microscopy and Electron Scattering (LUMES), Institute of Physics, École Polytechnique Fédérale de Lausanne (EPFL), Lausanne 1015 CH, Switzerland; ³Dipartimento di Fisica, Sapienza Università di Roma, Roma, Italy; ⁴Istituto Italiano di Tecnologia (IIT), Center for Life Nano Science @Sapienza, Roma, Italy; ⁵Lausanne Centre for Ultrafast Science (LACUS), École Polytechnique Fédérale de Lausanne (EPFL), CH-1015 Lausanne, Switzerland; ⁶Istituto Officina dei Materiali (IOM) - Consiglio Nazionale delle Ricerche (CNR), 34149 Trieste, Italy; ⁷Dipartimento di Fisica, Università di Trieste, Via Valerio 2, I-34127 Trieste, Italy; ⁸Elettra Sincrotrone Trieste S.c.P.A., Strada Statale 14, km 163.5, AREA Science Park, I-34149, Basovizza, Trieste, Italy; ⁹Istituto Italiano di Tecnologia (IIT), Graphene Labs, Genova, Italy; ¹⁰Laboratory of Quantum Optics, University of Nova Gorica, Si-5270 Ajdovščina, Slovenia; ¹¹Laboratory of Quantum Optics, University of Nova Gorica, Si-5270 Ajdovščina, Slovenia; ¹¹Center for Free-Electron Laser Science, DESY, Notkestraße 85, 22607 Hamburg, Germany

12:05pm - 12:20pm

Temperature dependence of stimulated versus spontaneous Raman scattering: an outlook towards ultrafast thermometry

Giovanni Batignani^{1,2}, Emanuele Mai^{1,2}, Miles Martinati¹, Mohanan M. Neethish¹, Shaul Mukamel³, Tullio Scopigno^{1,4}

¹Sapienza university of Rome, Italy; ²Italiano di Tecnologia, Center for Life Nano Science @Sapienza; ³University of California, Department of Chemistry, Irvine; ⁴Istituto Italiano di Tecnologia, Graphene Labs, Genova

Biological Raman Imaging II

Thursday, 01/Aug/2024

Session Chair: Marlous Kamp

Location: Ginestra (Chemistry)

10:00am - 10:20am

Raman micro-spectroscopy reveals the spatial distribution of fumarate in cells and tissues

Marlous Kamp^{1,2,3}, **Jakub Surmacki**⁴, **Marc Segarra Mondejar**^{5,6}, **Tim Young**⁵, **Karolina Chrabaszcz**⁷, **Fadwa Joud**², **Vincent Zecchini**⁵, **Christian Frezza**^{5,6}, **Sarah Bohndiek**^{1,2}

¹Department of Physics, University of Cambridge, United Kingdom; ²Cancer Research UK Cambridge Institute, United Kingdom; ³Present address: Utrecht University, The Netherlands; ⁴Institute of Applied Radiation Chemistry, Łódź University of Technology, Poland; ⁵Hutchison/MRC Cancer Unit, University of Cambridge, United Kingdom; ⁶CECAD Cologne, Germany; ⁷Institute of Nuclear Physics, Polish Academy of Sciences, Poland.

10:20am - 10:40am

Broadband Coherent Raman Imaging for Disease Diagnosis

Tobias Meyer-Zedler¹, **Carl Messerschmidt**¹, **Matteo Calvarese**¹, **Mohammadsadegh Vafaeinezhad**^{1,2}, **Rajendhar Junjuri**¹, **Anna Mühlig**³, **Denis Akimov**¹, **Michael Schmitt**², **Orlando Guntinas-Lichius**³, **Thomas Bocklitz**^{1,2}, **Juergen Popp**^{1,2}

¹Leibniz Institute of Photonic Technology, Germany; ²Friedrich-Schiller-University, Institute of Physical Chemistry and Abbe Center of Photonics, Jena; ³Jena University Hospital, Department of Otorhinolaryngology, Jena, Germany

10:40am - 11:00am

Visualization of topical drug delivery with label-free chemical imaging

Natalie Anne Belsey^{1,2}, **Dimitrios Tsikritsis**¹, **Panagiota Zampiri**³, **Jean-Luc Vorng**¹, **Vasundhara Tyagi**¹, **Alex Dexter**¹, **Anukrati Goel**², **Richard Guy**³

¹National Physical Laboratory, United Kingdom; ²University of Surrey, United Kingdom; ³University of Bath, United Kingdom

11:00am - 11:20am

Heterogeneous structure and order of protein condensation

Sapun Parekh

UT Austin, United States of America

11:20am - 11:35am

Deciphering the sum-frequency generation spectrum of collagen type I in the carbon-hydrogen stretching range

Yryx Luna Palacios¹, **Salile Khandani**¹, **Evan Garcia**¹, **Anabel Chen**¹, **Siyang Wang**¹, **Khokan Roy**¹, **Dave Dave**¹, **Diane Kim**¹, **Israel Rocha-Mendoza**², **Eric O. Potma**¹

¹University of California Irvine, United States of America; ²Centro de Investigación Científica y de Educación Superior de Ensenada, Ensenada, Mexico

11:35am - 11:50am

Raman study of liquid-liquid phase separation, constitution of viral factories, and reovirus assembly

Peter Moizes¹, **Katerina Hofbauerova**¹, **Vladimir Kopecky**¹, **Eva Durinova**^{2,3}, **Tomas Bily**^{2,3}, **Zdenek Franta**², **Tomas Fessi**², **Roman Tuma**²

¹Charles University, Czech Republic; ²University of South Bohemia, Czech Republic; ³Biology Centre CAS, Czech Republic

11:50am - 12:05pm

The integration of electrophysiology and Raman spectroscopy for biological and drug dynamics investigation

Christian Tentellino, **Marta D'Amora**, **Rustamzhon Melikov**, **Giuseppina Iachetta**, **Giulia Bruno**, **Francesco Tantussi**, **Michele Dipalo**, **Francesco De Angelis**

Istituto italiano di tecnologia, Italy

12:05pm - 12:20pm

Stimulated Raman Scattering Spectromicroscopy: Advanced Label-Free Detection of Cetuximab in ex vivo Tumor Models

TAMASRI SENAPATI¹, **Leonie Schwartze**², **Christian Zoschke**³, **Eckart Rühl**¹

¹Physical Chemistry, Institute of Chemistry and Biochemistry, Freie Universität Berlin; ²Institute of Pharmacy, Freie Universität Berlin; ³Department of Veterinary Medicines, Federal Office of Consumer Protection and Food Safety, Berlin

SERS-based Biomedical Sensors II

Thursday, 01/Aug/2024

Session Chair: Seunghyun Lee

Location: **Conversi (Marconi)**

10:00am - 10:20am

Template-Assisted Arrays of Plasmonic Nanoparticles for Surface-Enhanced Raman Scattering (SERS) Sensors

Seunghyun Lee

Hanyang University ERICA, Korea, Republic of (South Korea)

10:20am - 10:40am

SERS Applications in Liquid Biopsy for Cancer Diagnosis

Wang Yuling

School of Natural Sciences, Macquarie University, Australia

10:40am - 10:55am

Probing intracellular interactions with SERS in the presence of a fluorescent dye

Cecilia Spedalieri, **Janina Kneipp**

Humboldt-Universität zu Berlin, Germany

10:55am - 11:10am

Observation of DNA strand interaction with SERS

Aicha Azziz, **Qiqian Liu**, **Celia Arib**, **Marjan Majdinasab**, **Mathieu Edely**, **Marc Lamy de la Chapelle**

Institute of Molecules and Materials of Le Mans - University of Le Mans, France

11:10am - 11:25am

SERS temperature measurements link cell fate to temperature increase during cancer photothermal therapy

William H. Skinner¹, **Renata L. Sala**², **Kamil Sokolowski**², **Sara Mosca**³, **Ben Gardner**¹, **Jeremy Baumberg**², **Oren Scherman**², **Pavel Matousek**³, **Nick Stone**¹

¹University of Exeter, United Kingdom; ²University of Cambridge, United Kingdom; ³Rutherford Appleton Laboratory, United Kingdom

11:25am - 11:40am

Sensitive pathogens detection using nanozyme based catalysis amplification on Ag-PSi SERS scaffold

Narsingh Raw Nirala¹, **Giorgi Shtenberg**²

¹Institute of Agricultural Engineering, ARO, the Volcani Center, Bet Dagan 50250, Israel; ²Institute of Agricultural Engineering, ARO, the Volcani Center, Bet Dagan 50250, Israel

11:40am - 11:55am

The problems with diagnostic methods based on untargeted SERS of biofluids

Alois Bonifacio

Università degli studi di Trieste, Italy

11:55am - 12:10pm

Development of integrated SERS-microfluidic device for the detection of small extracellular vesicles from breast cancer patients' plasma

Cao Hoang Long Ngo¹, **Amin Hassanzadeh-Barforoushi**¹, **David Inglis**², **Yuling Wang**¹

¹School of Natural Sciences, Macquarie University, Sydney, NSW, Australia; ²School of Engineering, Macquarie University, Sydney, NSW, Australia

12:10pm - 12:25pm

From Development to Detection: Dendritic Nanostructures in SERS for Advanced Biomolecular Analysis

Aradhana Dwivedi¹, **Vladimir Sivakov**¹, **Juergen Popp**^{1,2}, **Dana Cialla-May**^{1,2}

¹Leibniz Institute of Photonic Technology, Member of Leibniz Health Technologies, Member of the Leibniz Centre for Photonics in Infection Research (LPI), Jena, Germany; ²Institute of Physical Chemistry and Abbe Center of Photonics, Friedrich Schiller University Jena, Member of the Leibniz Centre for Photonics in Infection Research (LPI), Jena, Germany

Microplastics I

Thursday, 01/Aug/2024

Session Chair: **Stefania Federici**

Location: **Aula 3 (Fermi)**

10:00am - 10:30am

Collaborative Strategies for Advancing Microplastic Research

Stefania Federici

University of Brescia and INSTM Research Unit, Brescia, Italy

10:30am - 10:45am

Microplastics detection in seawater using 2D Raman

mapping of a filter (membrane) with residue

Yaroslav Aulin, Andrii Kutsyk, Oleksandr Vasyliiev, Danylo Komisar, Sofus Boisen, Yurii Pilhun, Oleksii Ilchenko
Lightnovo ApS, Denmark

10:45am - 11:00am

Evaluation of Raman and Fluorescence Techniques for Detection and Identification of Microplastics in Environmental Samples

Merel C. Konings, Lars de Bie, Robert W. Schmidt, Freek Ariese
Vrije Universiteit Amsterdam, Netherlands, The

11:00am - 11:15am

Combination of asymmetric flow field-flow fractionation and Raman spectroscopy enabled by dielectrophoresis to quantify and identify nanoplastics in water

Marta Fadda¹, Alessio Sacco¹, Korinna Altmann², Miguel A. Bañares³, Raquel Portela³, Andrea Mario Rossi¹, Andrea Mario Giovannozzi¹

¹Istituto Nazionale di Ricerca Metrologica (INRiM), Italy; ²Bundesanstalt für Materialforschung und -prüfung (BAM), Germany; ³Institute of Catalysis and Petrochemistry (CSIC-ICP), Spain

11:15am - 11:30am

Blue, naturally degraded nanoplastics abundance and their detection via two Raman-based approaches

Ioana Marica^{1,2}, Ion Nesterovschi¹, Cosmin Farcău², Simona Cîntă Pinzaru¹

¹Ioan Ursu Institute, Babes-Bolyai University, Cluj-Napoca, Romania; ²National Institute for Research and Development of Isotopic and Molecular Technologies, Cluj-Napoca, Romania

11:30am - 11:45am

Development and validation of a microRaman spectroscopy method to detect small microplastics in milk powder/infant formula

Mara Putzu¹, Marta Fadda¹, Alessio Sacco¹, Andrea Mario giovannozzi¹, Korinna Altmann², Nizar Benismail³, Andrea Mario Rossi¹

¹Istituto Nazionale di Ricerca Metrologica (INRiM); ²Bundesanstalt für Materialforschung und -prüfung (BAM); ³Nestlé Quality Assurance Centre (NQAC)

11:45am - 12:00pm

Time-Gated Raman Spectroscopy for Fluorescence Reduction in Recycled Polymers

Nicolas Spegazzini¹, Eero Hietala¹, Jussi Tenhunen¹, Katariina Rahkamaa-Tolonen¹, Ilkka Rytöluoto², Pelto Jani², Mika Paajanen²

¹Optical measurements team, VTT Technical Research Center of Finland Ltd, Oulu, Finland; ²Materials processing and circular solutions, VTT Technical Research Centre of Finland Ltd, Tampere, Finland.

12:00pm - 12:15pm

A wide-field Fourier-Transform Raman Microscope for fast microplastics detection

Benedetto Ardini¹, Lucia Pittura², Maura Benedetti², Stefania Gorbi², Andrea Frontini², Francesco Regoli², Gianluca Valentini^{1,3}, Giulio Cerullo^{1,3}, Cristian Manzoni³

¹Dipartimento di Fisica, Politecnico di Milano, Piazza Leonardo da Vinci 32, I-20133 Milano, Italy; ²Dipartimento di Scienze della Vita e dell'Ambiente, Università Politecnica delle Marche, Ancona, Italy; ³Istituto di Fotonica e Nanotecnologie, IFN-CNR, Piazza Leonardo da Vinci 32, I-20133 Milano, Italy

Biology and Biomedicine: General I

Thursday, 01/Aug/2024

Session Chair: **Christy L Haynes**

Location: **Amaldi (Marconi)**

10:00am - 10:20am

Label-free detection of viruses with SERS through analyte localization and polymer-enabled capture

Cassandra L Wouters, Mahmoud Matar Abed, Timmy B Nguyen, Clarice E Froehlich, Christy L Haynes

University of Minnesota, United States of America

10:20am - 10:40am

Arrayed Nanoplasmonic/SERS Molecular Biosensing of Cancer Biomarkers for Rapid and Low-Cost Liquid Biopsy

Wei-Chuan Shih

University of Houston, United States of America

10:40am - 11:00am

SERS-based method for detecting and identifying pathogenic microorganisms - bacteria and viruses.

Agnieszka Kaminska

Polish Academy of Sciences, Poland

11:00am - 11:15am

Ultrasensitive pathogens detection using nanozyme catalysis amplification SERS assay on Ag-Psi

Ofer Nehushtaj^{1,2}, Nirala Narsingh Raw^{1,2}, Giorgin shtenberg^{1,2}

¹Hebrew University in Jerusalem, Israel; ²Volcani Institute

11:15am - 11:30am

Tandem SERS and MD profiling of salivary biomarkers for point-of-care sensors detecting head and neck cancer and infections

Edoardo Farnesi^{1,2}, Chen Liu^{1,2}, Dana Cialla-May^{1,2}, Michael Schmitt¹, Juergen Popp^{1,2}

¹FSU Jena, Germany; ²Leibniz Institute of Photonic Technology, Leibniz Health Technologies, Jena, Germany

11:30am - 11:45am

Emerging SERS platforms based on MoS₂-2D flakes for the characterization of extracellular vesicles derived from ovarian cancer

Lorena Amelia Veliz Portal, Tyler Cooper, Cédric Lambin, Michael McCarvell, François Lagugné-Labarthet

University of Western Ontario, Canada

11:45am - 12:00pm

Intraoperative Tumor Diagnosis in Head and Neck Cancer with Raman Spectroscopy (RAMAN-HNSCC): A Prospective Clinical Trial

Ayman Bali¹, Thomas Bitter¹, Ines Latka², Florian Windirsch², Mussab Kouka¹, Jonas Ballmaier¹, Katja Otto¹, Katja Scherf¹, Nikolaus Gassler², David Pertzborn¹, Anna Muehlig¹, Ferdinand von Eggeling¹, Juergen Popp^{2,3}, Iwan Schie^{2,4}, Orlando Guntinas-Lichius¹

¹Department of Otorhinolaryngology, Jena University Hospital, Jena, Germany; ²Leibniz Institute of Photonic Technology, Jena, Germany; ³Institute of Physical Chemistry and Abbe Centre of Photonics, Friedrich Schiller University, Jena, Germany; ⁴Department for Medical Engineering and Biotechnology, University of Applied Sciences, Jena, Germany; ⁵Department of Pathology, Jena University Hospital, Jena, Germany

12:00pm - 12:15pm

Label-Free Albumin Quantification Using Surface-Enhanced Raman Spectroscopy

W. J. Niels Klement^{1,2}, Daniel R. Duijnste^{2,3}, Vika Telle¹, Alexandar Staykov³, Wesley R. Browne², Elisabeth Verpoorte¹

¹Pharmaceutical Analysis, Groningen Research Institute of Pharmacy, Faculty of Science and Engineering, University of Groningen, the Netherlands; ²Molecular Inorganic Chemistry, Stratingh Institute for Chemistry, Faculty of Science and Engineering, University of Groningen, the Netherlands; ³International Institute for Carbon-Neutral Energy Research (I 2CNER), Kyushu University, Japan

12:15pm - 12:30pm

Advanced Spectroscopic Analysis of Modified Metallic Surfaces for Biomedical Applications

Dominika Świech¹, Gaetano Palumbo¹, Magdalena Oćwieja², Anna Golda³, Joanna Kozielec³, Natalia Piergies⁴

¹AGH University of Krakow, Faculty of Foundry Engineering, av. Mickiewiczza 30, PL-30059 Krakow, Poland; ²Jerzy Haber Institute of Catalysis and Surface Chemistry Polish Academy of Sciences, Niezapominajek 8, PL-30239 Krakow, Poland; ³Jagiellonian University, Department of Microbiology, Faculty of Biochemistry, Biophysics and Biotechnology, PL- 30387 Krakow, Poland; ⁴Institute of Nuclear Physics Polish Academy of Sciences, Radzikowskiego 152, PL-31342 Krakow, Poland

2D Materials

Thursday, 01/Aug/2024

Session Chair: **Francois Lagugne-Labarthet**

Location: **Aula A (Chemistry)**

10:00am - 10:30am

Probing Materials at the Nanoscale: a Journey in Tip-

Enhanced Spectroscopy.

Francois Lagugne-Labarthe, Joachim Jelken, Cedric Lambin, Lorena Veliz

University of Western Ontario, Canada

10:30am - 10:50am

Layer Hybridisation and Exciton-Phonon Coupling in MoSe₂/WSe₂ Heterobilayers

Oisín Garrity¹, Thomas Brumme², Annika Bergmann³, Tobias Korn³, Stephanie Reich¹, Patryk Kusch¹

¹Ferie Universität Berlin, Germany; ²Chair of Theoretical Chemistry, Technische Universität Dresden, Germany; ³Institut für Physik, Universität Rostock, Germany

10:50am - 11:05am

Polarization-angle resolved Raman spectroscopy of α -Ga₂O₃ grown on m-plane sapphire

Luca Sung-Min Choi¹, Alwin Wüthrich¹, Clemens Petersen², Hans Tornatzky³, Benjamin M. Janzen¹, Holger von Wenckstern², Marius Grundmann², Markus R. Wagner^{1,3}

¹Technische Universität Berlin, Germany; ²Universität Leipzig, Germany; ³Paul-Drude-Institut, Germany

11:05am - 11:20am

Magnetic Field Dependent Raman Scattering in 2D Materials and Thin Films

Hans Tornatzky

Paul-Drude-Institut for solid state electronics, Germany

11:20am - 11:35am

Dynamics of Fractionalized Spins in Quasi 2D Magnetic VO_{0.85}PS₃

Pradeep Kumar

IIT Mandi, India

Industrial and Societal Applications I

Thursday, 01/Aug/2024

Session Chair: **Leandro Malard**

Location: **Aula 4 (Fermi)**

10:00am - 10:15am

Quantitative Studies on the Microstructures of Ternary CaO-Al₂O₃-SiO₂ Glasses, Melts and the Correlation with Viscosities

Jinglin You¹, Xiaohui Tang¹, Fu Zhang¹, Aurélien Canizarès², Catherine Bessada², Liming Lu³, Kai Tang⁴, Qingli Zhang⁵, Songming Wan⁵

¹State Key Laboratory of Advanced Special Steel & Shanghai Key Laboratory of Advanced Ferrometallurgy & Shanghai University, Shanghai 200444, China; ²CNRS, CEMHTI UPR3079, Université d'Orléans, Orléans, France; ³Queensland Centre for Advanced Technologies, Technology Court, CSIRO Mineral Resources, Pullenvale, Queensland, 4069, Australia; ⁴SINTEF AS, Trondheim Norway N-7436; ⁵Anhui Key Laboratory for Photonic Devices and Materials, Anhui Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, Hefei 230031, China

10:15am - 10:30am

Investigating YAG-Pits in Intraocular Lenses using Raman microscopy supplemented by micro-CT and SEM

Harald Fitzek^{1,2}, Tatiana Kormilina¹, Johannes Rattenberger¹, Fabio Eduardo Machado Charry³, Robert Schennach³, Eva-Maria Borkenstein⁴, Andreas Borkenstein⁴

¹Graz Centre for Electron Microscopy (ZFE), Steyrergasse 17, 8010 Graz, Austria; ²Institute for Electron Microscopy and Nanoanalysis (FELMI), Graz University of Technology (TU Graz), NAWI Graz, Steyrergasse 17, 8010 Graz, Austria; ³Institute of Solid State Physics, Graz University of Technology (TU Graz), NAWI Graz, Petersgasse 16/2, 8010 Graz, Austria; ⁴Borkenstein & Borkenstein private practice, Privatklinik Der Kreuzschwwestern Graz, Kreuzgasse 35, 8010 Graz, Austria

10:30am - 10:45am

Structure and thermodynamic stability of the aqueous diborate ion up to hydrothermal conditions: A Raman spectroscopic and Ab-Initio investigation

Swaroop Sasidharanpillai¹, Jenny Cox¹, Cory Pye², Peter Tremaine¹

¹Department of Chemistry, University of Guelph, Guelph, ON, Canada, N1G 2W1; ²Department of Chemistry, Saint Mary's University, Halifax, NS, Canada, B3H 3C3

10:45am - 11:00am

Determination of cinnamon adulteration by Fourier Transform (FT) Raman spectroscopy combined with chemometrics

KONSTANTINOS CHATZIPANAGIS, Ana Sanfeliu

Joint Research Centre, Belgium

11:00am - 11:15am

Multiplex pathogenic bacteria detection in milk with the nanoparticle-assisted porous silicon-based SERS microarray biosensor

Divagar Muthukumar¹, Omer Tamari², Giorgi Shtenberg¹

¹Institute of Agricultural Engineering, ARO, Volcani Institute, Rishon LeZion, Israel; ²Department of Biotechnology, Faculty of Mathematics and Sciences, The Hebrew University of Jerusalem, Jerusalem, Israel

11:15am - 11:30am

Diagnosing arsenic-induced biochemical responses in rice using Raman spectroscopy

Isaac Daniel Juarez Hinojosa, Tianyi Dou, Sudip Biswas, Endang Septiningsih, Dmitry Kurovski

Texas A&M University, College Station, United States of America

11:30am - 11:45am

Raman Spectroscopy Sensor for Gas Detection: Implications for Planetary Exploration and Industry

Ivan Reyes Rodriguez, Marco Veneranda, Sofia Julve-Gonzalez, Aurelio Sanz-Arranz, Jose Antonio Manrique-Martinez, Fernando Rull, Guillermo Lopez-Reyes

Universidad de Valladolid, Spain

11:45am - 12:00pm

Decoding SERS performance via a comparative analysis of five commercial SERS substrates

Mehdi Feizpour¹, Qing Liu², Hugo Thienpont², Wendy Meulebroeck², Heidi Ottevaere²

¹Vrije Universiteit Brussel, Department of Applied Physics and Photonics, Brussels Photonics, Pleinlaan 2, 1050 Brussel, Belgium; ²Vrije Universiteit Brussel and Flanders Make, Department of Applied Physics and Photonics, Brussels Photonics, Pleinlaan 2, 1050 Brussel, Belgium

12:00pm - 12:15pm

Improvements in SRS light sources: 10x faster imaging and 100x faster tuning

Edlef Buettner¹, Ingo Rimke¹, Gero Stibenz¹, Peter Trabs¹, Stefan Popien¹, Lenny Reinkensmeier², Rene Siegmund², Alexander Egner², Sandro Heuke³

¹APE GmbH, Berlin, Germany; ²Department of Optical Nanoscopy, Institute for Nanophotonics Göttingen, Germany; ³Aix Marseille Univ, CNRS, Centrale Marseille, Institut Fresnel, Marseille 13013, France

SERS, TERS, and Plasmonics: Mechanistic

Thursday, 01/Aug/2024

Session Chair: **Renee R. Frontiera**

Location: **Aula Magna**

1:30pm - 2:00pm

Raman Spectroscopic Probes of Photonic Materials for Solar Energy Conversion

Renee R. Frontiera

University of Minnesota, United States of America

2:00pm - 2:20pm

Plasmonics for Photochemistry of Ions and Molecules

Emily Sprague-Klein

Brown University, United States of America

2:20pm - 2:40pm

Plasmon-Molecule Coupling in Vibrational Circular Dichroism Spectroscopy

Aria Ballance, Flore Elliott, Anh Nguyen, Amy Morren, **Jennifer S. Shumaker-Parry**

University of Utah, United States of America

Non-Linear and Time Resolved: Excited-state Dynamics II

Thursday, 01/Aug/2024

Session Chair: **Jyotishman Dasgupta**

Location: **Cabibbo (Fermi)**

1:30pm - 1:50pm

Raman Snapshots of Ultrafast C-H Bond Activation in Water

Jyotishman Dasgupta
TIFR, Mumbai, India

1:50pm - 2:05pm

Absolute excited-state molecular geometries revealed by resonance Raman signals

Giovanni Batignani^{1,2}, Emanuele Mai^{1,2}, Giuseppe Fumero¹, Shaul Mukamel³, Tullio Scopigno^{1,2,4}

¹Physics Department, Sapienza, University of Rome, Rome, Italy; ²Italian Institute of Technology, Center for Life Nano Science @Sapienza, Rome, Italy; ³Department of Chemistry, University of California, Irvine, CA, USA; ⁴Italian Institute of Technology, Graphene Labs, Genoa, Italy

2:05pm - 2:20pm

Stretching Long Lived Excited States Using Molecular Design, A Time Resolved Resonance Raman Study.

Samuel J. Harris¹, Lea Muetzel¹, Samantha Jarvis¹, Henry Barry¹, Georgina E. Shillito³, Pawel Wagner², Stephan Kupfer³, James D. Crowley¹, Keith C. Gordon¹

¹Department of Chemistry, University of Otago, Aotearoa / New Zealand; ²Intelligent Polymer Research Institute/Australian Institute of Innovative Materials, University of Wollongong, Australia; ³Institute of Physical Chemistry, Friedrich Schiller University, Jena, Germany

2:20pm - 2:35pm

Photoactivation mechanism of Orange Carotenoid protein resolved by fs to millisecond stimulated Raman spectroscopy

Petra Chrupková^{1,4}, Ivo van Stokkum², Thomas Friedrich³, Tomáš Polívka⁴, Miroslav Klotz¹

¹The Extreme Light Infrastructure ERIC, Czech Republic; ²Vrije Universiteit, The Netherlands; ³Technische Universität Berlin, Germany; ⁴University of South Bohemia in České Budějovice, Czech Republic

Biological Raman Imaging III

Thursday, 01/Aug/2024

Session Chair: Martin Hedegaard

Location: Ginestra (Chemistry)

1:30pm - 1:50pm

Label-free 3-D molecular imaging of living tissues using Raman Spectral Projection Tomography

Mads S. Bergholt¹, Martin A. B. Hedegaard²

¹Centre for Craniofacial & Regenerative Biology, King's College London; ²SDU Chemical Engineering, Faculty of Engineering, University of Southern Denmark

1:50pm - 2:05pm

Cellular and tissue bioimaging by SERS spectroscopy using gold nanotags with cyanine dyes

Elena Solovveva, Vasilisa Svinko, Andrey Demenshin, Alexei Smirnov, Alisa Shenchuk

Saint-Petersburg State University, Russian Federation

2:05pm - 2:20pm

Quantification of biomolecules in a liquid droplet formed by liquid-liquid phase separation using the Raman band of water

Takakazu Nakabayashi, Kohei Yokosawa, Ren Shibuya, Kaichi Nagai, Shinya Tahara, Shinji Kajimoto

Tohoku University, Japan

2:20pm - 2:35pm

Detecting biochemical variation in brain organoid maturation stages through Raman microscopy

Giulia Bruno¹, Michal Lipinski³, Koseki Kobayashi², Christian Tentellino¹, Paola Arlotta³, Peter So², Jeon Woong Kang², Francesco De Angelis¹

¹IIT, Italy; ²MIT, USA; ³Broad Institute, USA

2:35pm - 2:50pm

Macroscopic biomedical imaging of chemical contrast using short-wave infrared Raman scattering

Bernardo Arus^{1,2,3}, Joycelyn Yiu^{1,2,3}, Jakob Lingg^{1,2,3}, Alexander Bartelt⁴, Tulio A. Valdez⁵, Andriy Chmyrov^{1,2,3}, Oliver T. Bruns^{1,2,3}

¹National Center for Tumor Diseases, Dresden, Germany; ²German Cancer Research Center (DKFZ), Heidelberg, Germany; ³Helmholtz Pioneer Campus, Helmholtz Munich, Neuherberg, Germany; ⁴Ludwig-Maximilians-Universität, Munich, Germany; ⁵Department of Otolaryngology, Head and Neck Surgery, Stanford University, Palo Alto, CA, USA

THz Raman

Thursday, 01/Aug/2024

Session Chair: Paul Champion

Location: Conversi (Marconi)

1:30pm - 2:00pm

Terahertz Raman Coherence in Biomolecules

Paul Champion

Northeastern University, United States of America

2:00pm - 2:20pm

Coherent THz Hyper-Raman: Spectroscopy and Application in THz Detection

Domenico Paparo¹, Andrea Rubano²

¹CNR-ISASI, Italy; ²Dipartimento di Fisica 'E. Pancini' - Università degli Studi di Napoli 'Federico II'

2:20pm - 2:35pm

Raman Spectroscopy of Metal-Organic Framework in the terahertz region

Alexander S. Krylov

Kirensky Institute of Physics FRC KSC SB RAS, Russian Federation

Microplastics II

Thursday, 01/Aug/2024

Session Chair: Harumi Sato

Location: Aula 3 (Fermi)

1:30pm - 2:00pm

Visualization of Marine Degradation Process of Poly(ϵ -caprolactone) using Raman Spectroscopy

Harumi Sato

Kobe University, Japan

2:00pm - 2:20pm

The Blue Project: the contribute of the Raman Spectroscopy for Investigating The Plastic Marine Litter

Valentina Raimondi², Alessandra Ciapponi³, Paolo Corradi³, Robin DeVries⁴, Paolo Di Maggio², Lorenzo Palombi², Maria Laura Santarelli¹

¹Sapienza University of Rome, Italy; ²Nello Carrara' Institute of Applied Physics – National Research Council (CNR-IFAC); ³ESA ESTEC; ⁴The Ocean Cleanup

2:20pm - 2:35pm

Optimized raman spectroscopy for nanoplastic detection dongha shin

Inha University, Korea, Republic of (South Korea)

2:35pm - 2:50pm

Optical Tweezers combined with Raman spectroscopy for micro/nanoplastics and car tyres micro/nanoparticulate analysis in liquid ambient

Raymond Gillibert¹, Alessandro Magazzù¹, Silvie Bernatova¹, Antonino Foti¹, Maria Grazia Donato¹, Agnese Callegari², Onofrio Maragò¹, Giovanni Volpe², Marc Lamy de La Chapelle³, Fabienne Lagarde³, Pietro Giuseppe Gucciardi¹

¹CNR – IPCF, Istituto per i Processi Chimico-Fisici, Viale F. Stagno D'Alcontres 27, I-98158 Messina, Italy; ²Department of Physics, University of Gothenburg, 41296 Gothenburg, Sweden; ³Institut des Molécules et Matériaux du Mans, UMR 6283 CNRS, Le Mans Université, Le Mans, France

Biomedical Applications II

Thursday, 01/Aug/2024

Session Chair: Hidetoshi Sato

Location: Amaldi (Marconi)

1:30pm - 1:50pm

Fat Analysis in Live Cell and Tissue with Raman Spectroscopy

Hidetoshi Sato, Pradjna N. Paramitha, Keita Iwasaki, Kosuke Hashimoto, Bibin B. Andriana, Yukihiko Ozaki

Kwansei Gakuin University, Japan

1:50pm - 2:10pm

Raman microspectroscopy and Raman imaging for drug efficacy testing and disease monitoring

Katja Schenke-Layland^{1,2}

¹University Tübingen, Institute of Biomedical Engineering, Dept. for Medical Technologies and Regenerative Medicine; ²NMI Natural and Medical Sciences Institute at the University Tübingen, Germany

2:10pm - 2:25pm

O-PTIR spectroscopy to study ochronosis of tissues in alkaptonuria

Harriet Willett¹, Cassio A Lima¹, Juliette H Hughes², Brendan P Norman², Lakshminarayan R Ranganath^{2,3}, James A Gallagher², Royston Goodacre¹

¹Centre for Metabolomics Research, Department of Biochemistry and Systems Biology, Institute of Systems, Molecular and Integrative Biology, University of Liverpool, Liverpool, UK; ²Department of Musculoskeletal and Ageing Science, Institute of Life Course and Medical Sciences, University of Liverpool, Liverpool, UK; ³Department of Clinical Biochemistry and Metabolic Medicine, Royal Liverpool University Hospital, Liverpool, UK

2:25pm - 2:40pm

Molecular signature during the formation of Blastema in regenerating Annelid Using Resonance Raman spectroscopy and phasor approach

Pooja Manik Badgujar¹, Pei-Yang Huang¹, Artashes V. Karmenyan¹, Viktor Nikolayev², Jiun-Hong Chen³, Chia-Liang Cheng¹

¹National Dong Hwa University, Hualien, Taiwan; ²Tomsk State University, Tomsk Oblast, 634050, Russia; ³National Taiwan University, Taipei, Taiwan

Nanostructured Materials

Thursday, 01/Aug/2024

Session Chair: Ado Jorio

Location: Aula A (Chemistry)

1:30pm - 2:00pm

Raman spectroscopy reveals periodic lattice distortion in twisted heterostructures of 2-dimensional materials

Hyeonsik Cheong

Sogang University, Korea, Republic of (South Korea)

2:00pm - 2:20pm

Unveiling the charge transfer/recombination pathway of sensitizing photocycloaddition with lead halide perovskite nanocrystals

Jingheng Yuan¹, Umot Ozuguzel², Chen Wang¹

¹Queens College & The Graduate Center, CUNY, United States of America; ²University of Connecticut

2:20pm - 2:35pm

Angle-Resolved Polarized and Temperature dependent Raman Scattering of 2D Hexylammonium Lead Iodide Perovskite

Maria Fernanda Munoz¹, Angela R. Hight Walker¹, Thuc Mai¹, Ahseen Adel¹, Adeyayo M. Sanni², Destiny Konadu², Zhen-Fei Liu², Aaron Rury²

¹National Institute of Standards and Technology, United States of America; ²Wayne State University, United States of America

2:35pm - 2:50pm

Structural Phase Transitions in Layered Hybrid Organic-inorganic Metal-halide Perovskites by Raman spectroscopy: Effect of Transition Metal and Organic Cation

Yaiza Asensio García¹, Sergio Marras², Davide Spirito³, Marco Gobbi^{4,5}, Mihail Ipatov⁶, Fèlix Casanova^{1,5}, Aurelio Mateo Alonso^{5,7}, Luis Hueso^{1,5}, Beatriz Martín García^{1,5}

¹CIC nanoGUNE, Spain; ²Istituto Italiano di Tecnologia, Italy; ³IHP–Leibniz-Institut für innovative Mikroelektronik, Germany; ⁴Materials Physics Center CSIC-UPV/EHU, Spain; ⁵IKERBASQUE, Basque Foundation for Science, Spain; ⁶SGIker Medidas Magnéticas Gipuzkoa, Spain; ⁷POLYMAT, Spain

Pharmaceutical Applications II

Thursday, 01/Aug/2024

Session Chair: Marta Zofia Pacia

Location: Aula 4 (Fermi)

1:30pm - 1:45pm

Tracking chemical interactions of Caspofungin on silver nanoparticles through SERS spectroscopy for antifungal applications

Daphne Coppoli Lanferini, Antonio Carlos Sant'Ana, Francis Moreira Borges

Universidade Federal de Juiz de Fora, Brazil

1:45pm - 2:00pm

Metal-organic frameworks for efficient mephedrone detoxification or supervised withdrawal – synthesis, characterisation, and in vivo studies

Kornelia Hyjek¹, Grzegorz Kurowski¹, Przemysław J. Jodłowski¹, Klaudia Dymek¹, Anna Boguszewska-Czubara², Barbara Budzyńska³, Olga Wronikowska-Denyśniuk³, Aleksandra Gajda⁴, Witold Piskorz⁵, Paweł Śliwa¹, Magdalena Szumera⁶, Piotr Jeleń⁶, Maciej Sitarz⁶

¹Faculty of Chemical Engineering and Technology, Cracow University of Technology, 24 Warszawska, 31-155 Kraków, Poland; ²Department of Medical Chemistry, 4A Chodzki, Medical University of Lublin, 20-093 Lublin, Poland; ³Independent Laboratory of Behavioral Studies, 4A Chodzki, Medical University of Lublin, 20-093 Lublin, Poland; ⁴Strata Mechanics Research Institute of the Polish Academy of Sciences, Reymonta 27, 30-059 Kraków, Poland; ⁵Faculty of Chemistry, Jagiellonian University, Gronostajowa 2, 30-387 Kraków, Poland; ⁶Faculty of Materials Science and Ceramics, AGH University of Krakow, Mickiewicza 30, 30-059 Kraków, Poland

2:00pm - 2:15pm

Classification of THC and CBD in cannabis oils using Raman spectroscopy combined with chemometrics and machine learning

Thitaphat Ngernsutivorakul¹, Jittipon Wuttirattanak¹, Raju Botta², Kantapong Sucharitpongpan³, Rungroj Jintamethasawat², Orapin Chienthavorn¹

¹Department of Chemistry, Faculty of Science, Kasetsart University, Thailand; ²National Electronics and Computer Technology Center, National Science and Technology Development Agency, Thailand; ³Department of Electrical Engineering, Faculty of Engineering and Industrial Technology, Silpakorn University, Thailand

2:15pm - 2:30pm

SERS in complex bio samples – from drug monitoring to microbial communication

Dana Cialla-May^{1,2}, Jürgen Popp^{1,2}

¹Leibniz Institute of Photonic Technology, Jena, Germany; ²Friedrich Schiller University Jena, Germany

2:30pm - 2:45pm

Design and functionalization of the metal nanoparticles for future biomedical approaches. Micro- and nano-spectroscopy studies.

Natalia Anna Piergies¹, Magdalena Oćwieja², Klaudia Cieżak¹, Dominika Święch³, Maciej Roman⁴, Wojciech M. Kwiatek¹, Katarzyna Pogoda¹

¹Institute of Nuclear Physics Polish Academy of Sciences, PL-31342 Krakow, Poland; ²Jerzy Haber Institute of Catalysis and Surface Chemistry Polish Academy of Sciences, Niezapominajek 8, PL-30239 Krakow, Poland; ³AGH University of Science and Technology, Faculty of Foundry Engineering, av. Mickiewicza 30, 30-059 Krakow, Poland; ⁴SOLARIS National Synchrotron Radiation Centre, Jagiellonian University, Czerwone Maki 98, 30-392 Krakow, Poland

SERS, TERS, and Plasmonics: Sensors II

Thursday, 01/Aug/2024

Session Chair: Alexandre Brolo

Location: Aula Magna

3:00pm - 3:30pm

Surface-enhanced anti-Stokes Raman from metallic nanostructures

Alexandre Brolo

University of Victoria, Canada

3:30pm - 3:50pm

Improving SERS Sensing by Understanding Metal-Molecule Interactions

Laura Fabris, Debora Ferrari, Shaila Thakur, Chiara Deriu

Politecnico di Torino, Italy

3:50pm - 4:10pm

Benchmarking SERS Sensors: A Path to Standardized Evaluations

Li-Lin Tay

National Research Council Canada, Canada

4:10pm - 4:30pm

Comparison of chemically synthesized gold nanobowls, nanourchins and nanospheres composed with graphene oxide as ultrasensitive SERS platforms.

Barbara Palys, Mateusz Kasztelan, Sylwia Zoladek, Krystian Pupel, Kacper Jedrzejewski

University of Warsaw, Poland

4:30pm - 4:45pm

Novel hybrid magneto-plasmonic nanoclusters for ultrasensitive detection through SERS effect

Francesco Mattii¹, Caterina Dallari^{1,2}, Caterina Credi^{1,2}

¹European Laboratory for Non-linear Spectroscopy (LENS), University of Florence, Italy; ²National Institute of Optics, National Research Council (CNR-INO), Florence, Italy

4:45pm - 5:00pm

Nanoscale Characterization Elucidating Defects in 2D Semiconducting MoS₂ Nanolayers using Tip-Enhanced Raman Spectroscopy

Sanju Gupta^{1,2}

¹Gdansk university of Technology; ²Penn State University

5:00pm - 5:15pm

Electromagnetic enhancement and charge transfer synergistic of noble metals and metal-oxides as SERS platform for detection of organic dyes

Akanksha Motla, S. Annapoorni

University Of Delhi, India

Non-linear Spectroscopy II

Thursday, 01/Aug/2024

Session Chair: Tobias Brixner

Location: Cabibbo (Fermi)

3:00pm - 3:30pm

High-Order Resonance Raman Spectroscopy

Tobias Brixner

University of Würzburg, Germany

3:30pm - 3:50pm

Ultrafast exciton dynamics mediated by vibronic couplings

Antonietta De Sio

University of Oldenburg, Germany

3:50pm - 4:10pm

Using Time-Domain Raman Spectroscopy to Expose Vibronic Mixing in Chlorophylls

Donatas Zigmantas¹, Ignacio M. Casasús¹, Eglé Bukarté¹, Claudia Büchel²

¹Lund University, Sweden; ²Goethe University Frankfurt, Germany

4:10pm - 4:40pm

Exploring Excited State Landscapes with Surface Enhanced Hyper-Raman Scattering

Jon Camden

University of Notre Dame, United States of America

4:40pm - 5:00pm

Origin of unique hyper-Raman signals of sugar and model compound

Hirotsugu Hiramatsu

National Yang Ming Chiao Tung University, Taiwan

5:00pm - 5:20pm

Observation of Coherent Anti-Stokes Hyper-Raman Scattering

Masanari Okuno

The University of Tokyo, Japan

Biological Raman Imaging IV

Thursday, 01/Aug/2024

Session Chair: Jian Ye

Location: Ginestra (Chemistry)

3:00pm - 3:20pm

Supermultiplexed and Superdeep Surface-Enhanced Raman Scattering Bioimaging

Jian Ye

Shanghai Jiao Tong University, China, People's Republic of

3:20pm - 3:40pm

High-throughput Raman-activated Cell Sorting and Sequencing via FlowRACS 3.0 and RACS-Seq/Culture

Jian Xu¹, Xixian Wang¹, Xiaoyan Jing¹, Yuetong Ji², Ethan Yin³, Bo Ma¹

¹Chinese Academy of Sciences, Qingdao Institute of BioEnergy and Bioprocess Technology, Qingdao, Shandong, China; ²Single-Cell Biotech Ltd, Qingdao, Shandong, China; ³eCyte Inc, Delaware, USA

3:40pm - 3:55pm

The formation of vascular lipid droplets and their ATGL-dependent lipolysis - spectroscopic and functional insight

Natalia Chorazy^{1,2}, Kamila Wojnar-Lason^{1,3}, Stefan Chlopicki^{1,3}, Marta Z. Pacia¹

¹Jagiellonian University, Jagiellonian Centre for Experimental Therapeutics, Bobrzynskiego 14, Krakow, Poland; ²Jagiellonian University, Doctoral School of Exact and Natural Sciences, Lojasiewicza 11, Krakow, Poland; ³Jagiellonian University, Chair of Pharmacology, Grzegorzeczka 16, Krakow, Poland

3:55pm - 4:10pm

Inside or outside the cells? The journey of a microplastic monitored by Raman microscopy

Stéphanie Devineau^{1,2}, Matthew Lindley¹, Takuya Yashiro¹, Patrick Lelliott¹, Katsumasa Fujita¹

¹Osaka University, Japan; ²Université Paris Cité, France

4:10pm - 4:25pm

Raman imaging of plant leaf cuticle adaptations in extreme alpine environment

Giuseppe Tiloca, Notburga Gierlinger

University of Natural Resources and Life Sciences, Austria

4:25pm - 4:40pm

Raman Imaging Algorithm for Analysing Therapy-Resistant Cancer Cells

Zannatul Ferdous¹, Jean Emmanuel Clement¹, Masumi Tsuda^{1,3,5}, Katsumasa Fujita⁶, Yasuaki Kumamoto⁶, Wang Lei^{1,5}, Menglu Li⁶, Thomas Bocklitz⁴, Jian Ping Gong^{1,3}, Shinya Tanaka^{1,5}, Tamiki Komatsuzaki^{1,2}

¹Institute for Chemical Reaction Design and Discovery (WPI-ICReDD), Hokkaido University,; ²Research Institute for Electronic Science, Hokkaido University,; ³Graduate School of Life Science, Hokkaido University,; ⁴Leibniz Institute of Photonic Technology,; ⁵Faculty of Medicine, Hokkaido University; ⁶Osaka University.

4:40pm - 4:55pm

Cannabidiol as a potential cell response modulator in radiotherapy – spectroscopic perspective

Karolina Chrabaszcz, Klaudia Cieżak, Agnieszka Panek, Wojciech M. Kwiatek, Katarzyna Pogoda

Institute of Nuclear Physics Polish Academy of Sciences, Radzikowskiego 152, 31-342 Krakow, Poland

4:55pm - 5:10pm

A single-system solution for multimodal label-free imaging

Dale Rhys Boorman¹, Pete Johnson¹, Riccardo Tagliapietra², Tim Batten¹

¹Renishaw plc, United Kingdom; ²Renishaw SpA, Italy

Novel Approaches: General III

Thursday, 01/Aug/2024

Session Chair: Cedric Malherbe

Location: Conversi (Marconi)

3:00pm - 3:20pm

Evaluating the solvation energy of the proton in super-acidic imidazolium ionic liquids using Raman Spectroscopy

Cedric MALHERBE, Aurelie RENSONNET, Gauthier EPPE

University of Liege, MolSys Research Unit, Belgium

3:20pm - 3:35pm

Dynamic and Controllable Characterization of Biological Macromolecules at the Single-Molecule Level using Optical

Tweezers-Coupled Raman Spectroscopy

Jingqiang Huang

The Hong Kong University of Science and Technology, Hong Kong S.A.R. (China)

3:35pm - 3:50pm

Exploring Excitation Resonance in Chirally Pure Nanotubes by Full Spectrum Raman Excitation Mapping

Paul Finnie¹, Jianying Ouyang¹, Jeffrey Fagan²

¹National Research Council Canada, Canada; ²National Institute of Standards and Technology

3:50pm - 4:05pm

From SERS to PIERS: Unveiling the power of light at the interface of Ag nanoparticles and thin TiO2 film

Łukasz Jan Pięta^{1,2}, Aneta Kisielewska³, Ireneusz Piwoński³, Kamilla Malek¹

¹Jagiellonian University, Faculty of Chemistry, Department of Chemical Physics; ²Jagiellonian University, Doctoral School of Exact and Natural Sciences; ³University of Lodz, Faculty of Chemistry, Department of Materials Technology and Chemistry

4:05pm - 4:20pm

Dual-mode Multichannel Instrument for Broadband Stimulated Raman Imaging

Giulio Gubello, Giulio Cerullo, Dario Polli, Giorgio Ferrari
Politecnico di Milano, Italy

4:20pm - 4:35pm

Exploring Chemical-Physical Interactions Between Carbon Atomic Wires and Silver Nanoparticles Using SERS and Synchrotron-Based UV Resonant Raman Spectroscopy

Simone Melesi¹, Pietro Marabotti^{1,2}, Barbara Rossi³, Valeria Russo¹, Carlo Spartaco Casari¹

¹Department of Energy, Politecnico di Milano via Ponzio 34/3, I-20133 Milano, Italy; ²Institut für Physik and IRIS Adlershof, Humboldt Universität zu Berlin, 12489 Berlin, Germany; ³Elettra Sincrotrone Trieste, S.S. 114 km 163.5, Basovizza, 34149 Trieste, Italy

4:35pm - 4:50pm

Spontaneous Raman flow cytometry using time delay integration

Toshiki Kubo¹, Matthew Lindley^{1,2}, Stéphanie Devineau^{1,3}, Menglu Li^{1,4}, Katsumasa Fujita¹

¹Osaka University; ²Tufts University; ³Université Paris Cité; ⁴Shenzhen Medical Academy of Research and Translation

4:50pm - 5:05pm

A multimodal wide-field Fourier-transform Raman microscope

Benedetto Ardini², Andrea Bassi², Alessia Candeco², Armando Gencò², Chiara Trovatiello³, Fang Liu⁴, Xiaoyang Zhu⁴, Gianluca Valentini^{2,1}, Giulio Cerullo^{2,1}, Renzo Vanna¹, Cristian Manzoni¹

¹Istituto di Fotonica e Nanotecnologie, CNR, Italy; ²Dipartimento di Fisica, Politecnico di Milano, Italy; ³Department of Mechanical Engineering, Columbia University, New York, USA; ⁴Department of Chemistry, Columbia University, New York, USA

Microplastics III

Thursday, 01/Aug/2024

Session Chair: **Andrea Mario Giovannozzi**

Location: **Aula 3 (Fermi)**

3:00pm - 3:30pm

Standardization and Harmonization Effort on Microplastics Analysis by Spectroscopic Methods

Mara Putzu¹, Marta Fadda¹, Alessio Sacco¹, Andrea Mario Rossi¹, Korinna Altmann², Dmitri Ciornii², Vilde Kloster Snekkevik³, Bert Van Bavel³, Nizar Benismail⁴, Andrea Mario Giovannozzi¹

¹Italian National Institute of Metrology (INRIM), Italy; ²Bundesanstalt für Materialforschung und -prüfung (BAM), Germany; ³Norwegian Institute for Water Research (NIVA), Norway; ⁴Nestlé Quality Assurance Centre (NQAC), France

3:30pm - 3:45pm

Raman Acoustic Tweezers

Maria G. Donato¹, Antonino Foti¹, Silvie Bernatova¹, Onofrio M. Maragò¹, Andrea Mandanici^{1,2}, Felice Torrisi^{3,4}, Pietro G. Gucciardi¹

¹CNR-IPCF, Istituto Processi Chimico-Fisici (Messina) Consiglio Nazionale delle Ricerche, Italy; ²Dipartimento di Scienze Matematiche e Informatiche, Scienze Fisiche e Scienze della Terra, Università di Messina, 98166 Messina, Italy; ³Dipartimento di Fisica e Astronomia,

Università di Catania & CNR-IMM (Catania Università), Via S. Sofia 64, 95123 Catania, Italy; ⁴Molecular Science Research Hub, Imperial College London, W12 0BZ, London, United Kingdom

3:45pm - 4:00pm

Fast microplastic detection by Raman microscopy coupled to essential information selection

Andrii Kutsyk¹, Yaroslav Aulin¹, Raffaele Vitale², Cyril Ruckebusch², Yurii Pilhun¹, Oleksii Ilchenko^{1,3}

¹Lightnovo ApS, Birkerød 3460, Denmark; ²Université de Lille, CNRS, LASIRE, F- 59000 Lille, France; ³Technical University of Denmark, Kgs. Lyngby 2800, Denmark

4:00pm - 4:15pm

Stable Isotope Raman Microspectroscopy: Applicability for Analysis of Microbial Degradation of Microplastics

Kara Müller, Martin Elsner, Natalia P. Ivleva
Technical University of Munich, Germany

4:15pm - 4:30pm

Automated analysis of small microplastic particles in environmental and food samples with Raman microscopy enhanced by Machine Learning methods

Dieter Fischer¹, Kristina Enders¹, Robin Lenz¹, Elisavet Kanaki¹, Mareike Schumacher¹, Julia Lötsch¹, Benedikt Hufnagl²

¹Leibniz Institute of Polymer Research, Germany; ²Hufnagl Chemometrics GmbH Wien, Austria

4:30pm - 4:45pm

Real world case study quantifying microplastics in drinking water with Raman microscopy

Luca Maurizi¹, Jennifer Ferguson², Tim Batten², Riccardo Tagliapietra², Jes Vollertsen¹

¹Department of the Built Environment, Aalborg University, Thomas Manns Vej 23, 9220, Aalborg, Denmark; ²Renishaw PLC, New Mills, Wotton-under-Edge, Gloucestershire, GL12 8JR

4:45pm - 5:00pm

Advancing Microfiber Analysis using Femtosecond Stimulated Raman Microscopy (FSRM)

Carolin Borbeck, Francisco van Riel Neto, Peter Gilch
Heinrich Heine University Düsseldorf, Germany

5:00pm - 5:15pm

Correlative techniques to probe micro- and nanoparticles and their human health implications

Hajar Elazri, Joao-Lucas Rangel, Thibault Brule
HORIBA FRANCE SAS, France

Structure and Function of Proteins II

Thursday, 01/Aug/2024

Session Chair: **David Punihaole**

Location: **Amaldi (Marconi)**

3:00pm - 3:20pm

Towards developing spectroscopic and chemical imaging tools to investigate amyloid fibril structures related to Alzheimer's Disease

David Punihaole

University of Vermont, United States of America

3:20pm - 3:35pm

Insights into Hydration and Hydrogen-Bonding in Aqueous Solutions of Ionic Liquids using Deep UV Raman Spectroscopy

Fatima Matroodi¹, Cettina Bottari¹, Barbara Rossi¹, Marco Paolantoni², Andrea Mele³

¹Elettra Sincrotrone, Italy; ²Department of Chemistry, Biology and Biotechnology, University of Perugia; ³Department of Chemistry, Materials and Chemical Engineering "G. Natta", Politecnico di Milano

3:35pm - 3:50pm

Orientations and structures at model protein-protein interfaces from chiral nonlinear vibrational spectroscopy and molecular dynamics simulations

Ferenc Bogar¹, Janos Horvath², Zoltan Nasztor², Mark Mero³, Szilvia Krekic², Andras Der², Zsuzsanna Heiner⁴

¹HUN-REN-SZTE Biomimetic Systems Research Group, Hungarian Research Network, Szeged, Hungary; ²HUN-REN Biological Research Centre, Institute of Biophysics, Szeged, Hungary; ³Max Born Institute for Nonlinear Optics and Short Pulse Spectroscopy, Berlin,

Germany; ⁴School of Analytical Sciences Adlershof, Humboldt-Universität zu Berlin, Germany

3:50pm - 4:05pm

The method of assignment of low-frequency bands in Raman spectra of human hair keratins

Elena Travkina, Nikolay Brandt, Andrey Chikishev
Faculty of Physics, Lomonosov Moscow State University, Moscow, Russian Federation

4:05pm - 4:20pm

Spectroscopic characterization of the coproporphyrin ferrochelatase from *Corynebacterium diphtheriae*

Andrea Dali¹, Federico Sebastiani¹, Thomas Gabler², Giada Zoppi¹, Paul Georg Furtmüller², Maurizio Becucci¹, Stefan Hofbauer², Giulietta Smulevich¹

¹Department of Chemistry "Ugo Schiff" (DICUS), University of Florence (Sesto Fiorentino, Italy); ²Department of Chemistry, Institute of Biochemistry, University of Natural Resources and Life Science (Vienna, Austria)

4:20pm - 4:35pm

Key residues in the active site of a bacterial ferrochelatase

Federico Sebastiani¹, Andrea Dali¹, Thomas Gabler², Paul Furtmüller², Maurizio Becucci¹, Stefan Hofbauer², Giulietta Smulevich¹

¹Department of Chemistry "Ugo Schiff" (DICUS), University of Florence (Sesto Fiorentino, Italy); ²Department of Chemistry, Institute of Biochemistry, University of Natural Resources and Life Science (Vienna, Austria)

4:35pm - 4:50pm

A study of synchrotron-based UV-resonance Raman spectra of N-acetylamino saccharides – In combination with their ATR-far ultraviolet spectroscopy study

Yusuke Morisawa¹, Kosuke Hashimoto², Fatima Matroodi³, Barbara Rossi³, Yukihiro Ozaki², Hidetoshi Sato²

¹Kindai University, Japan; ²Kwansei Gakuin University, Japan; ³Elettra - Sincrotrone Trieste, Italy

4:50pm - 5:05pm

Deep UV Raman spectroscopy for probing active eukaryotic viruses

Denis Rainovic^{1,2}, Fatima Matroodi¹, Lamyaa Almeahmadi³, Igor Lednev¹, Barbara Rossi¹, Claudio Masciovecchio¹, Alessandro Marcello²

¹Elettra - Sincrotrone Trieste S.C.p.A. S.S. 14 km 163,5 in AREA Science Park IT-34149 Basovizza, Trieste, Italy; ²International Centre for Genetic Engineering and Biotechnology (ICGEB) Padriciano, 99 34149 Trieste, Italy; ³University at Albany, SUNY, 1400 Washington Avenue, Albany, NY 12222, USA

5:05pm - 5:20pm

Dimensional Reduction of UV Resonance Raman Spectra of Proteins

Chanin Tangtartharakul, Judy Kim
University of California, San Diego, United States of America

2D Materials and Moire

Thursday, 01/Aug/2024

Session Chair: Hyeonsik Cheong

Location: Aula A (Chemistry)

3:00pm - 3:30pm

Interference Effect in the Tip-Enhanced Raman Spectra from Two-Dimensional Materials

Ado Jorio
Universidade Federal de Minas Gerais, Brazil

3:30pm - 3:50pm

Raman signature of soliton network in twisted bilayer materials

Vincent Meunier
The Pennsylvania State University, United States of America

3:50pm - 4:10pm

Disentangling Doping and Strain Effects at Defects of Grown MoS₂ Monolayers with Nano-optical Spectroscopies

Frederico B. Souza¹, Rafael B. Nadas¹, Rafael Martins², Ana Paula Barbosa², Jaqueline Soares², Bernardo Neves¹, Ivo Silvestre², Ado Jorio¹, Leandro Malard¹

¹Universidade Federal de Minas Gerais, Brazil; ²Universidade Federal de Ouro Preto, Brazil

4:10pm - 4:25pm

Magnetic Excitation-Phonon coupling in two-dimensional antiferromagnet above Néel temperature: A Raman study

Devesh Negi¹, Shalini Badola¹, Suvoodeep Paul¹, Nashra Pistawala², Luminita Harnagea³, Surajit Saha¹

¹Indian Institute of Science Education and Research Bhopal, India; ²Indian Institute of Science Education and Research Pune, India; ³I-HUB Quantum Technology Foundation, Indian Institute of Science Education and Research Pune, India

4:25pm - 4:40pm

Correlative polarization-sensitive Raman, PL, and SHG imaging of 2D materials

Miriam Boehmler¹, Tobias Noerenberg¹, Ute Schmidt¹, Hailong Hu², Thomas Dieing¹

¹Oxford Instruments WITec, Ulm, Germany; ²WITec Office, Beijing, China

4:40pm - 4:55pm

Phase Transitions of Cesium Lead Bromide Perovskite Quantum Dots Studied by Temperature-dependent Photoluminescence and Raman Spectroscopies

Jaeseong Heo, Nurwarrohan Andre Sasongko, Myeongkee Park BB21+ Program, Department of Chemistry, Pukyong National University, Busan, Korea

Biosensing III

Thursday, 01/Aug/2024

Session Chair: Tobias Meyer-Zedler

Location: Aula 4 (Fermi)

3:00pm - 3:20pm

Synchronous Chiral Discrimination and Identification of Aromatic Molecules by a Chiral-Label-Free SERS

YUKIHIRO OZAKI¹, YUE WANG², BING ZHAO³

¹Kwansei Gakuin University, Japan; ²North Eastern University; ³Jilin University

3:20pm - 3:35pm

Development of a SERS biosensor for the detection of miRNA

Martina Banchelli, Sara Tombelli, Cristiano D'Andrea, Marella de Angelis, Cosimo Trono, Francesco Baldini, Ambra Giannetti, Paolo Matteini
CNR-IFAC, Italy

3:35pm - 3:50pm

Understanding the Capping Agent/Metal Interactions in Colloidal Nanoparticles for the Direct SERS Measurement of Biological Analytes

Chiara Deriu, Laura Fabris
Politecnico di Torino, Italy

3:50pm - 4:05pm

Detection of DNA hybridization with Raman spectroscopy

Miklós Veres¹, Huy Van Nguyen², John Fossey², James Tucker², Attila Csáki¹, Roman Holomb¹

¹HUN-REN Wigner Research Centre for Physics, Budapest, Hungary; ²School of Chemistry, University of Birmingham, Birmingham, West Midlands, UK

4:05pm - 4:20pm

Raman spectroscopy detects the label-free up-regulation of carotenoids within the life states of unicellular organisms and plant seeds

Pooja Manik Badqujar¹, Yu-Chung Lin¹, Zhe-Rui Lin¹, Ming-Der Lin², Jiun-Hong Chen³, Chia-Liang Cheng¹

¹National Dong Hwa University, Taiwan; ²Tzu-Chi University, Taiwan; ³National Taiwan University, Taiwan

4:20pm - 4:35pm

Shining Light on Imperfection in Nanoimprint Lithography: Nanodome SERS for SARS-CoV2 Nasal Spray Detection

Mike Hardy¹, Hin On Martin Chu^{2,3}, Breandán J. F. Hill^{1,4}, Jason Wiggins¹, Katie Cavanagh^{1,5}, Alina Schilling¹, Pola Goldberg Oppenheimer^{2,3}, Liam M. Grover^{2,3}, Richard J. Winfield⁶, Matthew D. Doherty¹, Ryan McCarron¹, Paul Dawson¹, Robert M. Bowman¹

¹Smart Nano NI, Centre for Quantum Materials and Technologies, Sch. Maths and Physics, Queen's University Belfast, UK; ²Advanced Nano-

Materials Structures and Applications Laboratories, Sch. Chemical Engineering, University of Birmingham, UK; ³Healthcare Technologies Institute, Institute of Translational Medicine, Birmingham, UK; ⁴Causeway Sensors Ltd, 63 University Rd, Belfast, UK; ⁵Yelo Ltd, 20 Meadowbank Rd, Carrickfergus, UK; ⁶Tyndall Micronano Electronics, Tyndall National Institute, University College Cork, Ireland

4:35pm - 4:50pm

Analyzing human plasma by Raman spectroscopy at 532 nm: Role of carotenoids in human disease study

Julene Aramendia¹, Eneko Lopez-Corrilero^{1,2}, Giulia Gorla¹, Jaione Etxebarria-Elezgarai², Jose M. Amigo^{1,3}, Kepa Castro¹, Andreas Seifert^{2,3}

¹University of the Basque Country, Spain; ²CIC nanoGUNE BRTA; ³IKERBASQUE

4:50pm - 5:05pm

Reversible Temperature Sensing using Blue-Winged Grasshopper *Coloracris azureus* Wings

Limin Wang, Bodo Wilts

Department of Chemistry and Physics of Materials, Salzburg University, Austria

Friday 02 August

SERS, TERS, and Plasmonics: Applied

Friday, 02/Aug/2024

Session Chair: Sebastian Schlücker

Location: Aula Magna

8:45am - 9:05am

iSERS: from nanotags to POCT

Vi Tran, Elzbieta Stepula, Supriya Srivastav, Namhyun Choi, Sebastian Schlücker

University of Duisburg-Essen (UDE), Germany

9:05am - 9:25am

Surface-enhanced Raman Spectroscopy (SERS) for clinical monitoring and visualizing heterogeneous photocatalysis

Amit Nag

BITS Pilani Hyderabad Campus, India

9:25am - 9:40am

Polymer-functionalized multiwalled carbon nanotubes characterized by tip-enhanced Raman spectroscopy

Antonino Foti¹, Suriya Venkatesan², Bérengère Lebental³, Gaël Zucchi², Razvigor Ossikovski²

¹CNR-IPCF, V.le F. Stagno D'Alcontres 37, I-98158, Messina, Italy; ²LPICM, CNRS, Ecole Polytechnique, Institut Polytechnique de Paris, Route de Saclay, 91128 Palaiseau, France; ³COSYS-LISIS, Université Gustave Eiffel, IFSTTAR, F-77454 Marne-la-Vallée, France

9:40am - 9:55am

50 Years of SERS and its paradigm for Blue Bioeconomy

Simona Pinzaru

Babes-Bolyai University, Romania

9:55am - 10:10am

Enhanced Raman scattering in metasurfaces coupled with Hexagonal Boron Nitride

John Kerr¹, Emilia Petronijevic^{1,2}, Robin Jones¹, Alex Murphy¹, Emile Fourneau³, Aimee Nevill¹, Tim Batten⁴, Brian Smith⁴, Kristina Rusimova¹, Alejandro Silhanek³, Daniel Wolverson¹, Ventsislav Valev¹

¹Department of Physics, University of Bath, Bath, BA2 7AY, UK; ²SBAI Department, La Sapienza University of Rome, Rome, 00161 Rome, Italy; ³Experimental Physics of Nanostructured Materials, University of Liège, Belgium; ⁴Renishaw plc, Kingswood, UK

10:10am - 10:25am

Synergistic interaction of Gold-deposited Tungsten Disulfide (AuWS₂) Nano-composites for Surface-enhanced Resonance Raman Spectroscopic (SERRS) Studies of Charge-transfer (CT) Complexes

Ashwani Kumar Verma¹, Jaspal Singh², Laura Fabris¹

¹Politecnico di Torino, Italy; ²Laboratory of Advanced Materials for Energy and Environment, Université Du Québec à Trois-Rivières (UQTR), Trois-Rivières, Québec G9A 5H7, Canada

10:25am - 10:40am

Detection of Arsenite Contamination in Water: Aggregation-

Aided SERS Facilitated by Colloid Cross-linking

Moumita Das^{1,2}, Debraj Gangopadhyay¹, Radek Pelc¹, Romana Hadrovová¹, Jaroslav Sebestík¹, Petr Bouřil^{1,2}

¹Institute of Organic Chemistry and Biochemistry, Czech Academy of Sciences, Prague, Czech Republic, Czech Republic; ²Department of Analytical Chemistry, Faculty of Chemical Engineering, University of Chemistry and Technology, Prague, Czech Republic

Industrial and Societal Applications III

Friday, 02/Aug/2024

Session Chair: Katja Schenke-Layland

Location: Cabibbo (Fermi)

8:45am - 9:00am

Understanding Skeletal Growth and Microplastic Uptake in Corals

Jacob Kleboe¹, Tomoko Takahashi¹, Jacob Trend², Tessa Page², Cecilia D'Angelo², Joerg Wiedenmann², Niall Hanrahan¹, Gavin Foster¹, Sumeet Mahajan¹

¹School of Chemistry, Faculty of Engineering and Physical Sciences, University of Southampton, SO17 1BJ; ²School of Ocean and Earth Sciences, University of Southampton, National Oceanography Centre, Southampton SO14 3ZH

9:00am - 9:15am

Harnessing Raman Spectroscopy for the Analysis of Plant Biodiversity

Ekta Jain¹, Michelle Rose¹, Praveen Kumar Jayapal¹, Gajendra P Singh¹, Rajeev J Ram^{1,2}

¹Singapore-MIT Alliance for Research and Technology, Singapore; ²Research Laboratory of Electronics, Massachusetts Institute of Technology, United States

9:15am - 9:30am

Raman study on northwest's Italian crops: from laboratory to on-site analysis

Benedetta Albini¹, Maddalena Patrini¹, Adriano Marocco², Pietro Galinetto¹

¹Dipartimento di Fisica, Università degli Studi di Pavia, Italy; ²Dipartimento di Scienze delle Produzioni Vegetali Sostenibili, Università Cattolica del Sacro Cuore - Piacenza

9:30am - 9:45am

Industrial-grade Raman spectroscopy for in-situ natural gas composition measurements

Fabio Melison¹, Lorenzo Cocola¹, Elena Meneghin², Daniele Rossi², Luca Poletto¹

¹CNR - Istituto di Fotonica e Nanotecnologie; ²Pietro Fiorentini S.p.A.

9:45am - 10:00am

Discrimination of fresh and frozen-thawed Atlantic Salmon using Micro-Raman spectroscopy and chemometrics.

Muhammad Umair Ashfaq, Peter J. Torley, Ewan W. Blanch

Royal Melbourne Institute of Technology, Australia

10:00am - 10:15am

Novel Particle-In-Well technology for single molecule peptide sequencing by surface enhanced Raman spectroscopy (SERS)

Eva Bozo, Peilin Xin, Mulusew Yaltaye, Yingqi Zhao, Jianan Huang

University of Oulu, Finland

10:15am - 10:30am

Classification Of Environmental Microfibers Using Stimulated Raman Microspectroscopy

Sergey P. Laptinok¹, Luca Genchi¹, Anastasiia Martynova², Cecilia Martin^{2,3}, Carlos M. Duarte², Carlo Liberale^{1,4}

¹Biological and Environmental Science and Engineering Division, King Abdullah University of Science and Technology, Saudi Arabia; ²Red Sea Research Center and Computational Bioscience Research Center, King Abdullah University of Science and Technology, Saudi Arabia; ³Red Sea Global, SEZ Department of Environmental Sustainability, Saudi Arabia; ⁴Computer, Electrical and Mathematical Sciences and Engineering, King Abdullah University of Science and Technology, Saudi Arabia

10:30am - 10:45am

Raman-based Detection of Antibiotics and Metabolites in Pharmaceutical Formulations and Clinical-relevant Matrices

Chen Liu^{1,2}, Dana Cialla-May^{1,2}, Jürgen Popp^{1,2}

¹Leibniz Institute of Photonic Technology, Member of Leibniz Health Technologies, Member of the Leibniz Centre for Photonics in Infection

Research (LPI), Jena Germany; ²Institute of Physical Chemistry and Abbe Center of Photonics, Friedrich Schiller University Jena, Member of the Leibniz Centre for Photonics in Infection Research (LPI), Jena, Germany

Coherent Raman Imaging IV

Friday, 02/Aug/2024

Session Chair: Sandro Heuke

Location: Ginestra (Chemistry)

8:45am - 9:05am

Coherent Stokes Raman scattering microscopy (CSRS)

Sandro Heuke, Hervé Rigneault

Aix Marseille Univ, CNRS, Centrale Méditerranée, Institut Fresnel, Marseille, France.

9:05am - 9:25am

Metabolic Nanoscopy for Studying Aging and Diseases

Lingyan Shi

University of California San Diego, United States of America

9:25am - 9:45am

Expanding the Limits of Coherent Raman Scattering Microscopy for Bioanalytical Applications

Chi Zhang^{1,2,3}, Matthew G Clark¹, Bin Dong¹, Karsten J Mohn¹, Helen Campbell¹

¹Department of Chemistry, Purdue University, United States of America; ²Purdue Center for Cancer Research, Purdue University, United States of America; ³Purdue Institute of Inflammation, Immunology, and Infectious Disease, Purdue University, United States of America

9:45am - 10:00am

INSPIRE: In Situ Pump-Probe IR and Raman Excitation for High-Resolution Complementary Vibrational Imaging

Pengcheng Fu¹, Yongqing Zhang¹, Hyeon Jeong Lee², Delong Zhang¹

¹School of Physics, Zhejiang University, Hangzhou 310058, China; ²College of Biomedical Engineering & Instrument Science, Zhejiang University, Hangzhou 310027, China

10:00am - 10:15am

Real-time Wide-field broadband CARS microscopy

Chiara Ceconello¹, Andrea Rabolini¹, Federico Vernuccio¹, Salvatore Sorrentino¹, Arianna Bresci¹, Francesco Manetti¹, Marco Ventura², Renzo Vanna², Giulio Cerullo^{1,2}, Dario Polli^{1,2}

¹Department of Physics, Politecnico di Milano, P.zza L. da Vinci 32, Milan, Italy; ²CNR-Institute for Photonics and Nanotechnologies (IFN-CNR), P.zza L. da Vinci 32, Milan, Italy

10:15am - 10:30am

Coherent Raman Spectroscopy: Quo vadis?

Krzysztof Brzozowski¹, Malgorzata Baranska¹, Anna Pieczara^{1,2}, Wiktoria Korona¹

¹Jagiellonian University, Poland; ²Jagiellonian Centre for Experimental Therapeutics, Poland

SERS-based Biomedical Sensors III

Friday, 02/Aug/2024

Session Chair: Ferruccio Pisanello

Location: Conversi (Marconi)

8:45am - 9:05am

Neural endoscopes for vibrational spectroscopy in the mouse brain

Ferruccio Pisanello¹, Filippo Pisano^{1,2}, Liam Collard¹, Di Zheng¹, Mohammadrahim Kazemzadeh¹, Mariam Al Masmudi⁴, Elena Cid⁵, Antonio Balena¹, Barbara Spagnolo¹, Maria Samuela Andriani^{1,3}, Marco Bianco¹, Linda Piscopo^{1,3}, Teresa J Parras⁵, Francesco Tantussi⁶, Francesco Gentile⁷, Francesco De Angelis⁷, Manuel Valiente⁴, Liset M De La Prida⁵, Massimo De Vittorio^{1,3}

¹Istituto Italiano di Tecnologia, Center for Biomolecular Nanotechnologies; ²Dept. of Physics and Astronomy 'G. Galilei', University of Padua; ³Università del Salento, Dipartimento di Ingegneria dell'Innovazione; ⁴Spanish National Cancer Research Center (CNIO); ⁵Consejo Superior de Investigaciones Científicas, Instituto Cajal; ⁶Istituto Italiano di Tecnologia, Plasmon Nanotechnologies; ⁷Università della Magna Grecia

9:05am - 9:25am

Improving Accuracy of Quantification in SERS-based

Lateral Flow Assays: Experiment and Computational Modelling

Namhyun Choi^{1,2}, Seung Jin Baik^{2,4}, Andreas Kempf^{2,4}, Sebastian Schlücker^{1,2,3}

¹Physical Chemistry I, Department of Chemistry, University of Duisburg-Essen, Germany; ²Center of Nanointegration Duisburg-Essen (CENIDE), University of Duisburg-Essen, Germany; ³Center of Medical Biotechnology (ZMB), University of Duisburg-Essen, Germany; ⁴Institute for Energy and Materials Processes, University of Duisburg-Essen, Germany

9:25am - 9:40am

3D Hydrogels with Plasmonic Gold Nanostars for SERS Biosensing and Bioimaging

Gail Vinnacombe-Willson, Luis Liz-Marzán

CIC biomaGUNE, Spain

9:40am - 9:55am

LipoGold tags as game-changer multifunctional probes for SERS-based applications

Caterina Dallari^{1,2}, Jacopo Cardellini^{3,7}, Iliaria De Santis³, Lorenzo Riccio^{3,8}, Costanza Ceni^{2,3}, Amelia Morrone^{4,5}, Martino Calamai^{1,2}, Francesco Saverio Pavone^{1,2,6}, Caterina Credi^{1,2}, Costanza Montis³, Debora Berti³

¹National Research Council (CNR), Italy; ²European Laboratory for Non-Linear Spectroscopy (LENL), Sesto Fiorentino, Italy; ³Department of Chemistry "Ugo Schiff" and CSGI, University of Florence, Italy; ⁴Laboratory of Molecular Biology of Neurometabolic Diseases, Meyer Children's Hospital IRCCS, Florence, Italy; ⁵Department of Neurosciences, Psychology, Drug Research and Child Health, Florence, Italy; ⁶Department of Physics, University of Florence, Italy; ⁷Department of Chemistry and Applied Biosciences, ETH Zurich, Switzerland; ⁸Institute of Organic Chemistry, University of Vienna, Austria

9:55am - 10:10am

CRISPR/Cas-assisted surface-enhanced Raman spectroscopy (CRISPR-SERS) for biodetection

Ailing Su¹, Huimin Wang¹, Weiqing Xu¹, Xiangguo Liu², Shuping Xu¹

¹State Key Laboratory of Supramolecular Structure and Materials, College of Chemistry, Jilin University, Changchun 130012, P. R. China; ²Institute of Agricultural Biotechnology, Jilin Academy of Agricultural Sciences, Changchun, 130033

10:10am - 10:25am

Plasmonic thin films fabrication by additive manufacturing for biomedicine

Francesco Cardoni¹, Dorleta Jimenez de Aberasturi², Lucio Litti¹

¹University of Padua, Italy; ²CIC biomaGUNE, San Sebastián, Spain

Industrial and Societal Applications II

Friday, 02/Aug/2024

Session Chair: Maria Laura Santarelli

Location: Aula 3 (Fermi)

8:45am - 9:00am

Chemical and structural characterization of tannin-furanic foams using UV Resonant Raman scattering, FTIR imaging, X-Ray micro-Tomography and solid-state NMR

Francesco D'Amico¹, Thomas Sepperer², Giulia Saccomano¹, Diana Bedolla¹, Raphael J. F. Berger³, Primož Sket⁴, Elena Longo¹, Diego Dreossi¹, Lisa Vaccari¹, Maurizio E. Musso³

¹Eletra Sincrotrone Trieste, Italy; ²Salzburg University of Applied Sciences, Department Green Engineering and Circular Design, Markt 136a, 5431 Kuchl, Austria; ³University of Salzburg, Department of Chemistry and Physics of Materials, Jakob-Haringer-Strasse 2a, 5020 Salzburg, Austria; ⁴Slovenian NMR Center, National Institute of Chemistry, Hajdrihova 19, SI-1000, Ljubljana, Slovenia

9:00am - 9:15am

Raman Spectroscopy: An Important Analytical Tool in the Optimization of Plant-Based Protein Extraction

Jervee Malabanan Punzalan^{1,2,3,4}, Keith Gordon^{1,2}, Indrawati Oey^{2,5}, Sara Fraser Miller⁶, Sze Ying Leong^{2,5}, Kevin Sutton^{2,3}, Gert-Jan Moggre^{2,3}, Peter Hartono^{2,3,5}

¹Dodd-Walls Centre for Photonic and Quantum Technologies, Department of Chemistry, University of Otago, Dunedin 9016, New Zealand; ²Riddet Institute, Private Bag 11 222, Palmerston North 4442, New Zealand; ³The New Zealand Institute for Plant and Food Research Limited, Private Bag 4704, Christchurch Mail Centre, Christchurch 8140, New Zealand; ⁴Department of Physical Sciences and

Mathematics, College of Arts and Sciences, University of the Philippines, Manila, 1000, Philippines; ⁵Department of Food Science, University of Otago, PO BOX 56, Dunedin 9054, New Zealand; ⁶College of Science and Engineering, Flinders University, Adelaide 5042, South Australia

9:15am - 9:30am

Polymer lifecycle monitoring – coupling Raman with DSC for recyclability investigation.

Thibault Brule¹, Alina Maltseva¹, Massimiliano Rocchia¹, Michael Reber², Ludivine Fromentoux¹

¹HORIBA France SAS; ²Mettler Toledo GmbH

9:30am - 9:45am

Raman spectroscopy and machine learning for the quantification of lactic acid in wine malolactic fermentation

Anna Lisa Gilioli^{1,2}, Alessio Sacco², Marta Fadda², Andrea Mario Giovannozzi², Simone Giacosa³, Antonella Bosso⁴, Loretta Panero⁴, Silvia Raffaella Barera⁴, Stefano Messina⁴, Marco Lagori⁴, Silvia Motta⁴, Massimo Guaita⁴, Ettore Vittone¹, Andrea Mario Rossi²

¹Physics Department, University of Turin, Via P. Giuria 1, 10125 Turin, Italy; ²Istituto Nazionale di Ricerca Metrologica (INRiM), Strada delle Cacce 91, 10135 Turin, Italy; ³Agricultural, Forest and Food Sciences Department, University of Turin, Corso Enotria 2/C, 12051 Alba, Italy; ⁴Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria (CREA), Via Pietro Micca 35, 14100 Asti, Italy

9:45am - 10:00am

In-vivo classification of THC and CBD contents in cannabis plants using hand-handled Raman spectrometer

Danylo Komisar^{1,2}, Yaroslav Aulin², Andrii Kutsyk², Oleksii Ilchenko^{2,3}, Martin Aage Barsøe Hedegaard⁴, Rime Bahijc⁴

¹Department of Chemical and Biochemical Engineering, Technical University of Denmark, Kgs. Lyngby 2800, Denmark; ²Lightnovo ApS, 3460 Birkerød, Denmark; ³Center for Intelligent Drug Delivery and Sensing Using Microcontainers and Nanomechanics, Department of Health Technology, Technical University of Denmark, Kgs. Lyngby 2800, Denmark; ⁴SDU Chemical Engineering, Department of Green Technology, University of Southern Denmark, Odense 5230, Denmark

10:00am - 10:15am

Raman Spectroscopy analysis as a tool to study inorganic acids interactions in ATPS.

Guadalupe Falcón Millán, María Del Pilar González Muñoz, José Antonio Reyes Aguilera, Julio Cesar Armas Pérez, Teresa Alejandra Razo Lazcano
University of Guanajuato, Mexico

10:15am - 10:30am

Advancing Raman spectroscopy through machine learning for molecular recognition and ultra-sensitive detection

Vikas Yadav, Soumik Siddhanta

Indian Institute of Technology Delhi, Hauz Khas, New Delhi, India, 110016

Biology and Biomedicine: General II

Friday, 02/Aug/2024

Session Chair: Wang Yuling

Location: Amaldi (Marconi)

8:45am - 9:00am

A resonance Raman study on Chlamydomonas reinhardtii and Cyclotella meneghiniana under low, environmental-realistic Hg(II)-exposure

Ion Nesterovschi^{1,2}, Karlo Maskaric^{1,2}, Iuliana Poplcean¹, João Santos³, Rémy Millet³, Vera Slaveykova³, Simona Cinta-Pânzaru^{1,2}

¹Biomolecular Physics Department, Babes - Bolyai University; ²Institute for Research, Development and Innovation in Applied Natural Sciences, Babes-Bolyai University; ³Environmental Biogeochemistry and Ecotoxicology, Department F.A. Forel for Environmental and Aquatic Sciences, Faculty of Sciences, University of Geneva

9:00am - 9:15am

The wide applicability of SERS-tags in environmental science, bionanotech and agritech

Anna Mercedes, Francesco Cardoni, Moreno Meneghetti, Lucio Litti
Department of Chemical Sciences, University of Padova, Italy

9:15am - 9:30am

Vibrational spectroscopic techniques as diagnostic tools for cardiovascular diseases

Leonardo Pioppi¹, Gustavo Jose Justo Silva², Reza Parvan², Marco Paolantoni¹, Alessandro Cataliotti², Paola Sassi¹

¹University of Perugia, Italy; ²Oslo University Hospital and University of Oslo, Norway

9:30am - 9:45am

Brillouin and Raman microspectroscopy and ATR-FTIR spectroscopy to investigate Staphylococcus aureus – induced osteomyelitis and periprosthetic joint infections

Martina Alunni Cardinali¹, Marco Govoni², Sara Stefani¹, Alessandra Maso³, Elisa Storni³, Dante Dallari², Daniele Fioretto⁴, Paola Sassi¹

¹Department of Chemistry, Biology and Biotechnology, University of Perugia, Italy; ²Reconstructive Orthopaedic Surgery and Innovative Techniques – Musculoskeletal Tissue Bank, IRCCS Istituto Ortopedico Rizzoli, Italy; ³Laboratory of Microbiology and GMP Quality Control, IRCCS Istituto Ortopedico Rizzoli, Italy; ⁴Department of Physics and Geology, University of Perugia, Italy

9:45am - 10:00am

Live stimulated Raman histology

Youssef Ahmad¹, Lazaro Javier de Leon¹, Sébastien Mailfert¹, Gregor Hehl², Romain Appay³, Sandro Heuke¹, Hervé Rigneault¹

¹Aix Marseille Univ, CNRS, Centrale Med, Institut Fresnel, Marseille, France; ²MW Elektrooptik, Hamburg, Germany; ³APHM, INP, Inst Neurophysiopathol, CHU Timone, Service d'Anatomie Pathologique et de Neuropathologie, Marseille, France

10:00am - 10:15am

Hydration of sugars as probed by Extended Depolarized Light Scattering (EDLS), Raman and IR spectroscopies

Marco Paolantoni¹, Brenda Bracco¹, Lucia Comez², Paola Sassi¹

¹Università degli Studi di Perugia, Italy; ²CNR-IOM – Istituto Officina dei Materiali, Perugia, Italy

10:15am - 10:30am

Investigating Self-Association and Structural Properties of Mononucleotide G-quadruplexes at Low pH via Raman Optical Activity

Štěpán Jílek¹, Josef Kapitán², Ivan Barvík¹, Václav Profant¹

¹Institute of Physics, Faculty of Mathematics and Physics, Charles University; ²Department of Optics, Faculty of Science, Palacky University Olomouc

Materials IV

Friday, 02/Aug/2024

Session Chair: Ara Apkarian

Location: Aula A (Chemistry)

8:45am - 9:00am

Raman spectroscopy unveils nanostructure and phase engineering of manganese oxide thin films

Andrea Macrelli¹, Arianna Monforte Ferrario¹, Valeria Russo¹, Carlo S. Casari¹, Alessio Lamperti², Andrea Li Bassi¹

¹Department of Energy, Politecnico di Milano, Italy; ²Institute for Microelectronics and Microsystems (IMM), Consiglio Nazionale delle Ricerche (CNR), Unit of Agrate Brianza, Italy

9:00am - 9:15am

Micro- and Nano-scale Raman Characterization of VO₂ Thin Films for Smart Window Coatings

Ayushi Rai¹, Siiri Bienz², Vidar Hansen¹, Renato Zenobi², Naresh Kumar²

¹University of Stavanger, Norway; ²ETH Zurich, Switzerland

9:15am - 9:30am

Unravelling the structure-property correlation in some novel candidate organic ferroelectrics

Manjunath Balagopalan

Department of Chemistry, University of Oslo, Norway

9:30am – 9:45am

Anomalous Coupling of Phonon Modes to Specific Electronic States in bulk PdSe₂

Omar Abdul-Aziz¹, Daniel Wolverson², Charles Sayers³, Ettore Carpene⁴, Fulvio Parmigiani⁵, Hamoon Hedayat¹, Paul H. M. van Loosdrecht¹

¹Cologne University, Germany; ²University of Bath, United Kingdom; ³Politecnico di Milano, Italy; ⁴CNR-IFN Politecnico di Milano, Italy; ⁵University of Trieste, Italy

9:45am - 10:00am

Raman Spectroscopic Investigation of Nitrogen-containing highly-hydrogenated Amorphous Carbon Nanofoam

Subrata Ghosh, Valeria Russo, Carlo Casari
Politecnico di Milano, Italy

10:00am - 10:15am

Composite Analysis of Natural and Biogenic Minerals by Low-frequency Raman, Resonance Raman and ATR Far-Infrared Spectroscopy

Kohei TAMURA¹, Motohiro TSUBOI², Ryosuke KITANAKA², Hiroshi OKA², Ken-ichi AKAO¹, Yukihiro OZAKI²

¹JASCO Corporation; ²Kwansei Gakuin University

Plenary

Friday, 02/August/2024

Session Chair: Eric Potma

Location: Aula Magna

11:30am - 12:15pm

Cryo-Raman imaging: capturing the moment of biological activities

Katsumasa Fujita^{1,2}

¹Osaka University, Japan; ²AIST, Japan

Closing Ceremony

Friday, 02/August/2024

Location: Aula Magna

12:15pm - 1:00pm

Poster Session 1 (poster numbers 001 – 103)

Tuesday, 30/July/2024

Location: Cannizzaro (Chemistry)

10:45am - 12:45pm

001 - Implementation of the Hammett Acidity functions in Raman spectroscopy for determining the acidity level accessible in ionic liquids

Aurelie Rensonnet, Gauthier Eppe, Malherbe Cedric
University of Liege, Belgium

002 - Determining the Geographic Origin of Palm Oil using Handheld Raman Spectroscopy

Joe Stradling, Howbeer Muhammad-Ali, Royston Goodacre
University of Liverpool, United Kingdom

003 - Looking beyond noble metals: Quest for inexpensive but efficient SERS substrates

Rostislav Bukasov
Nazarbaiyev University, Kazakhstan

004 - Structural and Optical properties of Yb³⁺, Er³⁺-co-doped WO₃ upconversion nanoparticles

GyeongBok Jung, InCheol Hwang, HyeonJun Jung
Chosun University, Korea, Republic of (South Korea)

005 - Mechanistic and theoretical studies on Thiomolybdates as Catalyst for Hydrogen evolution reaction

Henriette Kolbinger
Johannes Gutenberg Universität Mainz, Germany

006 - Graphene mediated SERS detection of DNA Hybridization

Vlad Cucuie^{1,2}, Monica Potara¹, Marc Lamy de la Chapelle^{1,3}, Simion Astilean¹, Monica Focsan^{1,2}
¹Faculty of Physics, Babes-Bolyai University, 1 M. Kogalniceanu Str., 400084 Cluj-Napoca, Romania.; ²Nanobiophotonics and Laser Microspectroscopy Center, Interdisciplinary Research Institute in Bio-Nano-Sciences, Babes-Bolyai University, 42 T. Laurian Str., 400271 Cluj-Napoca, Romania.; ³Institut des Molécules et Matériaux du Mans (IMMM-UMR CNRS 6283), Université du Mans, Avenue Olivier Messiaen, 72085 Le Mans, France.

007 - Machine Learning-Assisted Raman Spectroscopy for the Classification of 21 Strains of Pseudomonas aeruginosa

Yoshiki Cook¹, Callum Highmore^{2,3}, Niall Hanrahan^{1,4}, Ysanne Pritchard⁵, Jeremy Webb^{2,3}, Sumeet Mahajan^{1,4}
¹School of Chemistry, Faculty of Engineering and Physical Sciences, University of Southampton, Southampton, UK; ²School of Biological Sciences, Faculty of Environmental and Life Sciences, University of Southampton, Southampton, UK; ³National Biofilms Innovation Centre (NBIC), University of Southampton, Southampton, UK; ⁴Institute for Life Sciences, University of Southampton, Southampton, UK; ⁵School of Mathematical Sciences, Faculty of Social Sciences, University of Southampton, UK

008 - Exploring the Structural and Electronic Dynamics of Self-Healing Materials for Energy Conversion and Storage: A Raman Spectroscopy Investigation

Michael Freduah Agvemang^{1,2}, Stefan Zechel¹, Martin Hager¹, Michael Schmitt¹, Juergen Poppp^{1,2}
¹Friedrich-Schiller-Universität Jena, Germany; ²Leibniz Institute of Photonic Technology

009 - Role of solvated lithium-ions on non-aqueous Li-CO₂ battery

Fan Gao, Jin-Chao Dong, Jian-Feng Li
College of Energy, College of Chemistry and Chemical Engineering, College of Materials, State Key Laboratory of Physical Chemistry of Solid Surfaces, iChEM, Xiamen University, Xiamen, 361005, China

010 - In situ Raman study of photocatalytic water oxidation on BiVO₄

Hongjia Wang, Hua Zhang, Jian-Feng Li
Xiamen university, China, People's Republic of

011 - Probing the Mesomeric Effect and its Influence on the Molecular Electron Density via Surface-Enhanced Raman Spectroscopy

Marc Bröckel, Kai Braun, Alfred Meixner
University of Tübingen, Germany

012 - Metal-nanoparticle-topped plasmonic tip structures for tip-enhanced Raman spectroscopy

Hiroki Itasaka¹, Kenji Shinozaki¹, Masayuki Nishi², Koichi Hamamoto¹

¹National Institute of Advanced Industrial Science and Technology (AIST), Japan; ²Kyoto University of Advanced Science, Japan

013 - Probing Plasmon-Driven Chemistry with a Transition Metal Photocatalyst

Elizabeth Donahue, Umar Yunusa, Natalie Warren, Prasenjit Srivastava, Emily Sprague-Klein

Department of Chemistry, Brown University, Providence, Rhode Island 02912, USA

014 - Modified graphene oxide-gold nanoparticles composites as sensitive rhodamine 6G and folic acid detection substrates

Krzysztof Pupał, Kacper Jędrzejewski, Sylwia Żołądek, Barbara Palys

University of Warsaw, Poland

015 - Fully Atomistic Multiscale Modeling of Surface-Enhanced Raman Scattering for Biosensing Applications

Sveva Sodomaco, Piero Lafiosca, Luca Nicoli, Tommaso Giovannini, Chiara Cappelli

Scuola Normale Superiore, Italy

016 - SERS efficiency in Detecting G-Quadruplexes: Citrate- vs. Spermine-Stabilized Silver Nanospheres

Petra Petrović, Snežana Miljanić

Faculty of Science, University of Zagreb, Croatia

017 - The role of Raman spectroscopy in the identification of cadmium yellow pigments

Radka Šefců¹, Václava Antušková¹, Marek Kotrlý², Ivana Turková², Žaneta Dohnalová³, Jana Luxová³, Petra Šulcová³

¹National Gallery in Prague, Staroměstské náměstí 12, 110 15 Prague 1, Czech Republic; ²Institute of Criminalistics, Strojnická 27, 170 89 Prague 7, Czech Republic; ³University of Pardubice, Studentská 95, 532 10 Pardubice 2, Czech Republic

018 - Gold Nanoparticles with Semi-Wrapped Prussian Blue for Highly Reliable and Sensitive Surface-Enhanced Raman Scattering Detection

Ting Wang, Peng Li

University of Macau, Macau S.A.R. (China)

019 - Unveiling Photochemical Reactions of Acetaminophen on Plasmonic Substrates using advanced spectroscopic methods

Matěj Kmetík^{1,2}, Ivan Kopal^{1,3}, Martin Král^{1,2}, Marcela Dendisová¹

¹University of Chemistry and Technology in Prague, Czech Republic; ²Institute of Organic Chemistry and Biochemistry in Prague, Czech Academy of Sciences, Czech Republic; ³Institute of Photonics and Electronics, Czech Academy of Sciences, Czech Republic

020 - Development of a multimodal analysis framework for a comprehensive investigation of bacterial vesicles

Lennart Christe, Annika Haessler, Nathalie Jung, Maike Windbergs

Goethe University Frankfurt am Main, Germany

021 - Scrutinizing the Consequences of Surface Complex Formation on Surface-enhanced Raman Spectra

Ivan Kopal^{1,2}, Valerie Smeliková¹, Matěj Kmetík¹, Marie Švecová³, Pavel Matějka¹, Marcela Dendisová¹

¹Department of Physical Chemistry, University of Chemistry and Technology Prague; ²Institute of Photonics and Electronics, Czech Academy of Sciences; ³Department of Analytical Chemistry, University of Chemistry and Technology Prague

022 - Study on the Effect of Structure-mediated Plasmon Resonance on Charge Transfer in MoS₂ based on SERS spectroscopy

Shuang Guo¹, Yoonseop Byun¹, Eungyeong Park¹, Yeonju Park^{1,2}, Lei Chen³, Young Mee Jung^{1,2}

¹Department of Chemistry, Institute for Molecular Science and Fusion Technology, Kangwon National University, Chuncheon 24341, Korea.; ²Kangwon Radiation Convergence Research Support Center, Kangwon National University, Chuncheon 24341, Korea.; ³School of Materials Science and Engineering, Jilin Jianzhu University, P.R.China

023 - CRISPR/Cas13a-mediated SERS-based dual-flow assay paper chip for point-of-care testing of SARS-CoV-2

Younju Jung, Jaebum Choo

Chung-Ang University, Korea, Republic of (South Korea)

024 - SERS-based microdroplet sensor for the rapid classification of SARS-CoV-2 and influenza A infections

Xiangdong Yu, Jaebum Choo

Chung-Ang University, Korea, Republic of (South Korea)

025 - SERS Activity of Electromagnetic and Charge Transfer Effects on PS/Ag/MoO₃ Film by RF Magnetron Sputtering

Yoonseop Byun¹, Shuang Guo¹, Young Mee Jung^{1,2}

¹Kangwon National University School, Korea, Republic of (South Korea); ²Kangwon Radiation Convergence Research Support Center, Kangwon National University, Korea

026 - RNA Release During Aberrant Phase Transition of Stress Granule: A Raman/Brillouin Imaging and Machine Learning Study

Ren Shibuya¹, Shinji Kajimoto^{1,2}, Hideyuki Yaginuma^{3,4}, Tetsuro Ariyoshi^{3,4}, Yasushi Okada^{3,4}, Takakazu Nakabayashi¹

¹Graduate School of Pharmaceutical Sciences, Tohoku University, Japan; ²JST PRESTO, Japan; ³WPI-IRCN, The University of Tokyo, Japan; ⁴RIKEN BDR, Japan

027 - Fabrication of Flexible Nanoporous Biosilica-Based SERS Active Platforms Using Layer-by-Layer Technique

Avse Mine Sarıdag, Mehmet Kahraman

Gaziantep University, Türkiye

028 - Insights into the Vibrational Dynamics and Phase Transitions of IM3PbBr₅ Perovskite: Temperature and Pressure-Dependent Studies

Szymon Smółka¹, Szymon Sobczak², Waldeci Paraguassu³, Maciej Ptak¹, Mirosław Mączka¹

¹Instytut Niskich Temperatur i Badań Strukturalnych im. Włodzimierza Trzebiatowskiego Polskiej Akademii Nauk, Poland; ²Adam Mickiewicz University, Poznań, Poland; ³Federal University of Pará, Belem, Brazil

029 - Translating Raman-Based Characterization of Cefazolin's Interaction with Staphylococcus aureus: From Extracellular Bacteria to an Intracellular Infection Model

María José González Vázquez^{1,2}, **Frederike Gladigau**^{1,2}, **Rustam R. Guliev**¹, **Astrid Tannert**^{1,3}, **Lorena Tuchscher**⁴, **Bettina Löffler**⁴, **Ute Neugebauer**^{1,2,3}

¹Leibniz Institute of Photonic Technology, Germany; ²Institute of Physical Chemistry, Friedrich Schiller University Jena, Germany; ³Center for Sepsis Control and Care, Jena University Hospital, Germany; ⁴Institute of Medical Microbiology, Jena University Hospital, Germany

030 - Electrochemically Fabricated Gold-Coated TERS Tips for Applications in Air and in Aqueous Medium

Yuhan Huang, **David Talaga**, **Patrick Garrigue**, **Gerardo Salinas**, **Gary S. Cooney**, **Laurent Bouffier**, **Sébastien Bonhommeau**

University of Bordeaux, Institut des Sciences Moléculaires (ISM - CNRS UMR 5255), F-33400 Talence, France

031 - Analysis of interactions between multiple pathogens using Raman spectroscopy

Dongyu Cui^{1,2}, **Petra Rösch**^{1,2}, **Jürgen Popp**^{1,2}

¹Institute of Physical Chemistry and Abbe Center of Photonics, Friedrich Schiller University Jena, Member of the Leibniz Centre for Photonics in Infection Research (LPI), Jena, Germany; ²Leibniz-Institute of Photonic Technology, Member of Leibniz Health Technologies, Member of the Leibniz-Centre for Photonics in Infection Research (LPI), Jena Germany

032 - Sofosbuvir polymorphs distinguished by polarized Raman microscopy

Věra Schrenková^{1,2}, **Josef Kapitán**³, **Petr Bouř**¹, **Argyro Chatziadi**², **Adam Sklenář**^{1,2}, **Jakub Kaminský**¹

¹Institute of Organic Chemistry and Biochemistry, Czech Republic; ²University of Chemistry and Technology, Czech Republic; ³Palacký University Olomouc, Czech Republic

033 - Electronic and Vibrational Study of Plasmon Driven Charge Transfer Dynamics in Tris(2,2'-bipyridine) Ruthenium (II) on Gold Nanospheres

Prasenjit Srivastava, **Natalie Warren**, **Umar Yunusa**, **Emily Sprague-Klein**

Brown University, United States of America

034 - InAs-InP superlattice nanowires with tunable phonon frequencies

Johannes Trautvetter¹, **Valentina Zannier**², **Aswathi K. Sivan**¹, **Francesca Rossi**³, **Diego de Matteis**¹, **Begoña Abad**¹, **Riccardo Rurali**⁴, **Lucia Sorba**², **Ilaria Zardo**¹

¹University Basel, Switzerland; ²Istituto Nanoscienze-CNR and Scuola Normale Superiore, Italy; ³IMEM-CNR, Italy; ⁴Institut de Ciència de Materials de Barcelona, Spain

035 - Porphyrin as chemoreceptor for dissolved carbon dioxide detection by Surface-enhanced Raman scattering (SERS)

Bruna Alves, **Bernardo Albuquerque Nogueira**, **Laura Rodriguez-Lorenzo**

INL - International Iberian Nanotechnology Laboratory, Portugal

036 - Variations in surface enhanced Raman scattering (SERS) of proteins

Shrobona Banerjee, **Lars Dannenberg**, **Janina Kneipp**

Humboldt-Universität zu Berlin, Germany

037 - The Influence of Corroded Copper Surface on the Enhancement of Raman Signal

Marie Svecova^{1,2}, **Ladislav Lapcak**², **Magnus Johnson**¹

¹KTH Royal Institute of Technology, Sweden; ²University of Chemistry and Technology Prague

038 - Aluminium nanoparticles for UV-SERES detection of biomolecules

Lina Mikoliunaite, **Martynas Talaikis**, **Gytaute Sirgedaite**, **Edvinas Orentas**, **Gediminas Niaura**

Center for Physical Sciences and Technology, Lithuania

039 - Thermal Phase Transition Behavior of 2D Perovskite Microcrystals as Studied by Low-Frequency Raman Microspectroscopy

Ryuto Yumiba¹, **Eric Wei-Guang Diao**², **Shinsuke Shigeto**¹

¹Kwansei Gakuin University, Japan; ²National Yang Ming Chiao Tung University, Taiwan

040 - Cetyltrimethylammonium chloride-mediated strategy for one-step SERS detection of copper ions

Feiya Sheng¹, **Ting Wang**²

¹Chengdu University, China; ²University of Macau, Macao, China

041 - Temporal Evolution of Single-Molecule SERS Spectra in Plasmonic Nanocavity

Patryk Pyczc, **Sylwester Gawinkowski**

Institute of Physical Chemistry Polish Academy of Sciences, Poland

042 - Raman Spectroscopy and Artificial Intelligence: a synergistic combination for liver cancer diagnosis

Concetta Esposito^{1,2}, **Mohammed Janneh**^{1,2}, **Sara Spaziani**^{1,2}, **Vincenzo Calcagno**^{1,2}, **Mario Luca Bernardi**^{2,3}, **Martina Iammarino**^{2,3}, **Chiara Verdone**^{2,3}, **Maria Tagliamonte**^{2,4}, **Luigi Buonaguro**^{2,4}, **Marco Pisco**^{1,2}, **Lerina Aversano**^{2,3}, **Andrea Cusano**^{1,2}

¹Optoelectronic Division-Engineering Department, University of Sannio, Benevento, Italy; ²Centro Regionale Information Communication Technology (CeRICT Scrl), Benevento, Italy; ³Informatics Group, Engineering Department, University of Sannio, Benevento, Italy; ⁴National Cancer Institute-IRCCS "Pascale", Napoli, Italy

043 - Chiral Sensing of Monosaccharides by Surface-Enhanced Raman Spectroscopy

Daedu Lee, **Yoonsoo Pang**

Gwangju Institute of Science and Technology, Republic of Korea

044 - Raman Spectroscopic Study on Microstructure of B2O3-CaO-SiO2 Glasses Jointly with Molecular Dynamics Simulation

Yingfang Xie¹, **Jinglin You**², **Shixiang Wang**², **Cuirong Huang**¹, **Yufang Zhao**², **Guopeng Liu**²

¹Shanghai Technical Institute of Electronics & Information, China, People's Republic of; ²State Key Laboratory of Advanced Special Steel & Shanghai Key Laboratory of Advanced Ferrometallurgy & Shanghai University, Shanghai 200444, China

045 - Raman Spectroscopy and Molecular Dynamics to Shed Light on Process of Tau Aggregation in Alzheimer's Disease

Callum Ellis

University of Southampton, United Kingdom

046 - Raman Mapping in Anoxic Conditions for Multimodal Analysis of Iron Archaeological Artifacts

Elodie Grandet¹, Ocson Reginald Cocen^{1,2}, Laura Brambilla¹

¹Haute École Arc Conservation-restauration, HES-SO University of Applied Sciences and Arts Western Switzerland; ²École Polytechnique Fédérale de Lausanne (EPFL), Institute of Materials, Tribology and Interfacial Chemistry Group

047 - Spectroscopic Techniques for Characterization of Clean Energy Based Nanomaterials

Natalie Lynn Warren¹, Prasenjit Srivastava¹, Umar Yunusa¹, Elizabeth Donahue¹, David Schauer², Emily Sprague-Klein¹

¹Brown University, United States of America; ²ETH Zurich, Switzerland

048 - Performance Evaluation of Multimodal Coherent Raman Microscope Part of a New qCSI Imaging Infrastructure

Teemu Tomberg¹, Antti Isomäki², Markku Vainio³, Lauri Halonen³, Markus Metsälä³, Jukka Saarinen¹, Clare Strachan¹

¹Faculty of Pharmacy, University of Helsinki, Finland; ²Faculty of Medicine, University of Helsinki, Finland; ³Department of Chemistry, University of Helsinki, Finland

049 - Au@Ag Core-Shell Nanoparticles for SERS

Gytaute Sirgedaite, Martynas Talaikis, Gediminas Niaura, Lina Mikoliunaite

State Research Institute Center of Physical Sciences and Technology (FTMC), Lithuania

050 - Structural analysis of chiral phosphorus-containing compounds

Markéta Pazderková¹, Hugo Kocek¹, František Králík², Markéta Christou Tichotová¹, Lucie Tučková¹, Lucie Bednárová¹, Eliška Procházková¹

¹Institute of Organic Chemistry and Biochemistry of the Czech Academy of Sciences, Czech Republic; ²Department of Analytical Chemistry, University of Chemistry and Technology, Technická 5, 166 28 Prague 6, Czech Republic

051 - Porous frameworks for low-concentration methane trapping and SEIRA sensing

Eleonora Cara¹, Matteo Fretto¹, Vittorio Bonino¹, Cecilia Romeo¹, Alberto Zoccante², Maurizio Cossi², Leonardo Marchese², Francesca Rolle¹, Francesca Durbiano¹, Stefano Pavarelli¹, Marco Santiano¹, Michela Segà¹, Giorgio Gatti², Angelo Angelini¹

¹INRiM, Istituto Nazionale di Ricerca Metrologica, Strada delle Cacce 91, 10135 Torino, Italy; ²Università del Piemonte Orientale, Viale T. Michel 11, 15121 Alessandria, Italy.

052 - Uncertainty Quantification in AI using Monte Carlo Dropout for Raman Spectra Classification

Jhonatan Contreras^{1,2}, Thomas Bocklitz^{1,2}

¹Friedrich Schiller University Jena, Germany; ²Leibniz Institute of Photonic Technology (LPI), Germany

053 - Synthesis of Magnetite Nanoparticles and Decoration with Silver Nanoparticles

Greta Zambzickaite^{1,2}, Lina Mikoliunaite^{1,2}

¹Department of Organic Chemistry, State Research Institute Center for Physical Sciences and Technology, Lithuania; ²Faculty of Chemistry and Geosciences, Vilnius University, Lithuania

054 - Improvement of 5-halouracils detection driven by Watson & Crick pairing recognition. A SERS-DFT study

Antonio Morais Neto, Mónica Benicia Mamián-López, Paula Homem-de-Mello

Federal University of the ABC, Brazil

055 - Investigation of data fusion pipelines for different cell subtypes analysis

Kazi Sultana Farhana Azam^{1,2}, Oleg Rybchikov^{1,2}, Anuradha Ramoji^{1,2}, Tanveer Ahmed Shaik¹, Christoph Krafft¹, Arnica Karuna^{1,2}, Oana-Maria Thoma³, Sarah Lemire³, Tobias Meyer-Zedler¹, Michael Schmitt², Iwan Schie¹, Maximilian Waldner³, Jürgen Popp^{1,2}, Thomas W Bocklitz^{1,2}

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056 - Formation of Molecule/Metal Surface Complexes and their Effect on SERS-spectra in the Systems of Amphetamine-Based Drugs and Colloidal Nanoparticles

Valerie Smeliková, Ivan Kopal, Martin Člupek, Marcela Dendisová, Marie Švecová

University of Chemistry and Technology, Prague, Czech Republic

057 - Tin Disulfide as an ultrasensitive SERS substrate for the detection of anionic molecule

Mariana Ramos Almeida¹, Hikari Kitadai², Xi Ling^{2,3,4}

¹Universidade Federal de Minas Gerais, Brazil; ²Department of Chemistry, Boston University, Boston, MA 02215, USA; ³Division of Materials Science and Engineering, Boston University, Boston, MA 02215, USA; ⁴The Photonics Center, Boston University, Boston, MA 02215, USA

058 - Strain Analysis of SiGe Layers on SOI: A Tip-Enhanced Raman Spectroscopy Approach for Accurate Germanium and Strain Percentage Determination

Giancarlo La Penna¹, Anacleto Proietti¹, Chiara Mancini¹, Pierfrancesco Atanasio¹, Luca Buccini¹, Narciso Gambacorti², Jérôme Richey², Daniele Passeri^{1,3}, Marco Rossi^{1,3}

¹Department of Basic and Applied Sciences for Engineering, Sapienza University of Rome, 00161 Rome, Italy; ²Université Grenoble Alpes, CEA, Leti, F-38000 Grenoble, France; ³Research Center for Nanotechnology applied to Engineering of Sapienza University of Rome (CNIS), 00185 Rome, Italy

059 - Theoretical DFT and experimental Raman characterization of the detection of octocrylene in sunscreen cosmetics and salt water

Denisa Diana Bumba, Karlo Makaric, Simona Cintă Pinzaru, Vasile Chis, Csilla Molnar

University Babeş Bolyai, Romania

060 - Coherent Phonon Spectroscopy as an emerging technique for space exploration

Yookyung Ha^{1,2}, Jonas Woeste^{2,1}, Dominic Azih^{2,1}, Enrico Dietz¹, Nikola Stojanovic¹, Michael Gensch^{1,2}

¹German Aerospace Center (DLR) Institute of Optical Sensor Systems, Germany; ²Technical University of Berlin, Germany

061 - Raman-based Detection of Natural Products in Microbial Communication

Tony Dib^{1,2}, Simone Edenhart^{3,4}, Aradhana Dwivedi^{1,2}, Dana Cialla-May^{1,2}, Axel Brakhage^{3,4}, Juergen Popp^{1,2}

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062 - Optimizing Raman Signals in customized spectrometers: Understanding the Tradeoff between Core Size, Numerical Aperture, and Slit Width

Sofía Julve González, Iván Reyes-Rodríguez, Samuel Moncayo, Chantal Elout, Michel Klein, Marco Veneranda, Jose A. Manrique, Aurelio Sanz-Arranz, Fernando Rull, Guillermo Lopez-Reyes
University of Valladolid, Spain

063 - FT-Raman Spectra, tautomerism and some Molecular Properties of 5-methylcytosine

Mauricio Alcolea Palafox¹, **Kaushal Rani**², **Sandeep Khanna**², **J.K. Vats**³, **S.P. Singh**⁴, **V.K. Rastogi**²

¹University Complutense of Madrid, Spain; ²Indian Spectroscopy Society, KC-68/1, Old Kavinagar, Ghaziabad-201 002, India; ³Phys Dept, RJC, J P University, Chapra-841 301, India; ⁴Phys Dept, Dr B R Ambedkar Govt Degree College, Mainpuri-205 001, India

064 - Raman and XRD characterization of PVP-Stabilized All-Inorganic Perovskites, with applications for Ozone gas detection

Samita Mishra, Jacob Wolfman, Yaakov R. Tischler

Bar-Ilan University, Israel

065 - Effects of intense freeze-thaw cycles on Arctic biological soil crusts as studied by Raman microspectroscopy

Rasa Platakyte¹, **Milda Pucetaite**², **Sofía Gabriela Rodas Samayoa**³, **Edith Hammer**², **Louise Rütting**³

¹Center for Environmental and Climate Research, Lund University, Sweden; ²Department of Biology, Lund University, Sweden; ³Department of Earth Science, University of Gothenburg, Sweden

066 - Raman technology for process control: transparent, chitin-based polymer foils produced from crustacean waste

Iuliana-Cornelia Poplăcean¹, **Karlo Maškarić**^{1,2}, **Dănuț-Alexandru Dumitru**¹, **Tudor Tămaș**³, **Lucian Barbu-Tudoran**^{4,5}, **Fran Nekvapil**^{1,2,4}, **Neculai Bogdan**⁶, **Simona Cîntă Pînzaru**^{1,2}

¹Babeș-Bolyai University, Biomolecular Physics Department, Kogălniceanu 1, 400084 Cluj-Napoca, Romania; ²RDI Institute in Applied Natural Sciences, BBU, Fantanele 30, Cluj-Napoca, Romania; ³Department of Geology, BBU, M. Kogălniceanu 1, 400084 Cluj-Napoca, Romania; ⁴National Institute for RD of Isotopic and Molecular Technologies, Donath 67-103, 400293 Cluj-Napoca, Romania; ⁵Electron Microscopy Center, BBU, Clinicilor 5-7, 400006 Cluj-Napoca, Romania; ⁶Metrohm Analytics Romania SRL, Str. E. Racoviță 5, 041753 Bucharest, Romania

067 - Raman technology for the development of a novel biogenic calcite based bone substitute material

Geza Lehel Lazar^{1,2}, **Iilrijana Bajama**^{1,2}, **Tudor Tamas**³, **Smiona Pinzaru**^{1,2}

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068 - Microplastics influence on human lung cells - subcellular identification of particles with the use of Raman spectroscopy

Karolina Papacz¹, **Magdalena Wyrwał**², **Ewa Ocłoń**³, **Jolanta Goł**¹, **Aleksandra Wilk**¹, **Marzena Rugeł**¹, **Joanna Chwiej**¹

¹AGH University of Krakow, Faculty of Physics and Applied Computer Science; ²AGH University of Krakow, Academic Centre for Materials and Nanotechnology; ³University of Agriculture in Krakow, Centre for Experimental and Innovative Medicine

070 - OPTIR is a method to monitor active substances for cartilage regeneration in 3D spheroid cultures of stem cells

Ewelina Bik¹, **Tomasz Wróbel**², **Sylwia Rzepa**¹, **Magdalena Wyrwał**¹

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071 - Raman Spectroscopic Properties of Pharmaceuticals in Aqueous Solutions: Interplay of Theory and Experiment

Giacomo D'Arcangelo^{1,2}, **Stefano Legnaioli**², **Filippo Lipparini**³, **Julien Bloino**¹

¹Scuola Normale Superiore, Italy; ²Applied and Laser Spectroscopy Laboratory, Institute of Chemistry of Organometallic Compounds, Research Area of National Research Council; ³Department of Chemistry and Industrial Chemistry, University of Pisa

072 - Quantitative Analysis of Intracellular Distribution and Metabolic Processes of Supersulfides Using Raman Microscopy

Keisuke Koga, **Shinji Kajimoto**, **Shinya Tahara**, **Tomohiro Konno**, **Takakazu Nakabayashi**

Grad. Sch. Pharm. Sci., Tohoku Univ.

073 - Unraveling the Impact of Salinity on Ancient Paper: A Raman Spectroscopy-Centric Approach with Optical Complementarity

Stefania PORCU¹, **Francesca Assunta PISU**¹, **Tullia Carla DAVID**¹, **Pier Carlo RICCI**¹, **Carlo Maria CARBONARO**¹, **Jarmila KODRIC**², **Daniele CHIRU**¹

¹Department of Physics, University of Cagliari, Italy; ²Alma Mater Europaea Ecm - Lubijana (Slovenia)

074 - Spectrally resolved Bell test exploiting Stokes-Anti Stokes photon correlation

Valeria Vento, **Francesco Ciccarello**, **Christophe Galland**

EPFL, Switzerland

075 - In vivo Real-time Multiplex Detection of Plant Signalling Molecules Using Surface-Enhanced Raman Scattering Nanosensor

Won Ki Son, **Seon-Yeong Kwak**, **Dea Hong Jeong**

Seoul National University, Korea, Republic of (South Korea)

076 - In operando Raman spectroscopy correlation analysis of electronic and structural changes during homogeneous and heterogeneous catalytic activity

Akuila Edwards¹, **Julian Hnoipek**¹, **Sarah Klingler**², **Kevin Siewerth**², **Sana Ullah**², **Alina Koba**², **Michael Schmitt**¹, **Dirk Ziegenbalg**², **Boris Mizaiakoff**², **Sven Rau**², **Montaha Anjass**², **Jürgen Popp**¹

¹Friedrich Schiller University, Germany; ²Ulm University, Germany

077 - Polydopamine functional surfaces for SERS monitoring of organic pollutants and food contamination

Irene Vassalini¹, **Beatrice Cerea**¹, **Leonardo Moscolari**², **Autchariya Boontanom**¹, **Erika Kozma**², **Francesco Galeotti**², **Ivano Alessandri**¹

¹Università degli Studi di Brescia, Italy; ²CNR-IMM Milano, Italy

078 - Evaluation of Osteogenic Differentiation Using Extended-focus Raman Imaging

Hegi Xi^{1,2,3}, **Menglu Li**^{1,5}, **Phan Bhongsatiern**^{3,4}, **Masahide Takedachi**⁴, **Yoshinori Yamaguchi**¹, **Katsumasa Fujita**^{1,2,3}

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079 - Metal-organic frameworks as sensors for CO₂ from water

Jonas Tittel¹, Jacopo Andreo², Subhajit Dutta², Bettina Baumgartner³, Bert Weckhuysen³, Joanna Goscianska⁴, Stefan Wuttke², Evelyn Ploetz¹

¹Ludwig-Maximilian Universität München, Germany; ²BCMaterials Leioa, Spain; ³University of Utrecht, The Netherlands; ⁴University of Poznan, Poland

080 - Mode optimized Tip-enhanced Raman Scattering

Oliver Tao Chen^{1,2}, Volker Deckert^{1,2}, Wei Wang^{1,2}

¹Leibniz Institute of Photonic Technology (IPHT), 07745 Jena, Germany; ²Institute of Physical Chemistry and Abbe Center of Photonics, Friedrich-Schiller-Universität Jena, Jena, Germany.

081 - Controlling the Surface in Surface-enhanced Raman Spectroscopy

Yingrui Zhang¹, Steven Ernest John Bell¹, Wafaa Aljuhani¹, Chunchun Li², Yikai Xu³

¹Queen's University Belfast, United Kingdom; ²University of Shanghai for Science and Technology, P. R. China; ³East China University of Science and Technology Shanghai, P. R. China

082 - CHEMICAL ANALYSIS OF ROCK PIGMENTS FROM SITE PONTA DA SERRA NEGRA IN THE SETE CIDADES NATIONAL PARK, PIAUÍ

Bruna de Souza Lopes^{1,2}, Gabrielly Jhasmin Vieira Silva¹, Geovana Carolyne Oliveira Silva¹, Benedito Batista Farias-Filho¹, Maria Conceição S. Meneses Lage¹, Francisco Eroni Paz Santos¹

¹Federal University of Maranhão, Brazil; ²Federal University of Piauí, Brazil

083 - High Throughput Multimodal System for Rapid Cell Analysis

S M Miftahul Islam¹, Kristina Worch², Ines Latka¹, Jürgen Popp^{1,3}, Antje Burse², Iwan W. Schie^{1,2}

¹Leibniz Institute of Photonic Technology, Germany; ²Department for Medical Engineering and Biotechnology, University of Applied Sciences Jena, Germany; ³Institute of Physical Chemistry and Abbe Centre of Photonics, Friedrich Schiller University Jena, Germany

084 - Dyed Hair and Swimming Pools: The Influence of Chlorinated Agitated Water on Surface-Enhanced Raman Spectroscopic Analysis of Dyes on Hair

Aidan Paul Holman^{1,2}, Roa Elsaigh², Ragd Elsaigh², Dmitry Kurouski²

¹Forensic and Investigative Sciences Program, Texas A&M University, United States of America; ²Department of Biochemistry and Biophysics, Texas A&M University, United States of America

085 - Integrating AFM and Raman Spectroscopy to study facet specific properties: the case of quercetin-dimethylformamide crystals

Emilia Prandini¹, Bruno Torre¹, Emmanuele Parisi¹, Andrew G.P. Maloney², Enzo Mario Di Fabrizio¹, Elena Simone¹

¹Department of Applied Science and Technology (DISAT), Politecnico di Torino, Torino, Italy; ²The Cambridge Crystallographic Data Centre (CCDC), Cambridge, United Kingdom

086 - Raman Spectroscopic Investigation of Dormancy in *Myxococcus xanthus*

Rekha Puthenkaleekkal Thankappan, Jyotsna Kalathera, Samay Pande, Siva Umopathy

IISc, India

088 - Temperature-dependent Resonance Raman spectroscopy of polymeric semiconductors

Anna Kyvri, Sophia Charalambous Hayes

Dept. of Chemistry, University of Cyprus, Cyprus

089 - Investigation of Tablet Coating Discoloration using Raman Spectroscopy and Chemometrics

saeideh Ostovar pour, Nisha Mistry

SFC, AD-MDS, GlaxoSmithKline Pharmaceuticals R&D, Stevenage, UK

090 - Simultaneous combination of electrochemistry and SERS effect for the fast detection of fentanyl

David Ibáñez, María Begoña González-García, David Hernández-Santos, Pablo Fanjul-Bolado

Metrohm DropSens S.L., Vivero Ciencias de la Salud, C/Colegio Santo Domingo de Guzmán, 33010 Oviedo (Spain)

091 - Multimodal Raman, Photoluminescence & SHG Imaging of 2D Materials

Angela Flack

Edinburgh Instruments, United Kingdom

092 - Monitoring cell dynamics via 3D SERS imaging using biocompatible SERS tags

Paula Piñeiro Varela

CIC biomaGUNE, Spain

093 - Fuel cell characterization by Raman spectroscopy: from research to manufacturing

Thibault Brulé, Guillaume Ducourthial, Sarah Desplanche

HORIBA France SAS, France

094 - Transmission Raman Spectroscopy: A New Alternative to Enhance Process Raman for Biopharmaceuticals

Jeppu Hagedorn^{1,2}, Lars Poulsen³, Pernille Kjærgaard Qvist¹, Erik Skibsted¹, Martin A.B. Hedegaard²

¹Novo Nordisk A/S; ²University of Southern Denmark; ³Genmab A/S

095 - Raman Imaging System for 2D Materials Characterization

Sergei Shashkov

SOL instruments, Belarus

096 - Moving samples: adjusting to the speed of the process line.

James Matthew Thomson, Enrique Lozano

ELODIZ, United Kingdom

097 - Instant Histology of Fresh Tissue Samples Using a Clinical-Compatible Stimulated Raman Imaging Device

Tim Hellwig, Ramon Droop, Christoph Engwer, Felix Neumann, Niklas Lüpken, Sven Dobner, Anke Bonse, Brinkmann Maximilian

Refined Laser Systems GmbH, Germany

098 - Enhanced Drug Enforcement with Compact Spectrometer Solutions in Forensic Technology

Marcus Ravn Skyum^{1,3}, Yurii Pilhun¹, Yaroslav Aulin¹, Andrii Kutsyk¹, Anne-Flore Prior⁴, Marina Charest⁴, Pierre Esseiva⁵, Florentin Coppey², Oleksii Ilchenko^{1,3}, Oksana Farion¹

¹Lightnovo ApS, Denmark; ²Nirlab AG, Switzerland; ³Technical University of Denmark, Denmark; ⁴Ecole des Sciences Criminelles, Switzerland; ⁵Institut de Police Scientifique, Switzerland

99 - Towards the Analysis of Nanoplastics with Optical-Photothermal Infrared Spectroscopy

Marcel Klotz¹, Miriam Unger², Mustafa Kansiz², Natalia P. Ivleva¹

¹Technical University of Munich, Institute of Water Chemistry, Chair of Analytical Chemistry and Water Chemistry; ²Photothermal Spectroscopy Corp

100 - Photon-Counting Raman at MHz Spectral Rate for Biochemical Imaging of Entire Organism

Shuai Yan, Haozheng Li

Beijing Changping Laboratory, China

101 - Novel approach for biofilm characterization using Raman spectroscopy

Matvey Nikelshparg, Adrian Lehvy, Shimon Bershtein

Ben-Gurion University of the Negev

102 - Dual-mode nanothermometers exploiting Raman scattering and emission in the optical region

Veronica Zani¹, Chiara Cressoni², Roberto Pilot^{1,3}, Daniilo Pedron^{1,3}, Roberto Zamboni¹, Marina Franca¹, Silvia Gross^{1,3}, Raffaella Signorini^{1,3}, Adolfo Speghini²

¹Università degli Studi di Padova, Department of Chemical Sciences, via Marzolo 1, Padova.; ²Nanomaterials Research Group, Department of Biotechnology, University of Verona and INSTM, RU of Verona, Strada le Grazie 15, 37134 Verona, Italy.; ³Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali (INSTM), Via G. Giusti 9, 50121 Firenze, Italy

103 - Forward and Epi-Detected Stimulated Raman Spectra and Images of Two-Dimensional Dielectric Crystals

Hwansoo Jeon, Sunmin Ryu

POSTECH, Korea, Republic of (South Korea)

Poster Session 2 (poster numbers 200 – 305)

Tuesday, 01/August/2024

Location: Cannizzaro (Chemistry)

5:30pm - 7:30pm

200 - Synthesis, characterization and usage of PANI-coated gold nanoparticles as SERS redox potential sensor

Kacper Jędrzejewski, Krystian Pupel, Barbara Pałys

University of Warsaw, Poland

201 - Raman Spectroscopy and Optoelectronic Properties of Green Dye Doped Nanoparticles Embedded Polymer for Biomedical Applications

Haiitham Al-Tameemi, Maha Al-Hamadani

University of Basrah, College of Science, Iraq

202 - Designing better solar cell materials through experiment and theory

Amir Sohail

University of Otago, Dunedin- New Zealand,

203 - Raman spectroscopy investigations of electric field-induced structural changes in Lithium Niobate crystals.

Rodolph ISKANDAR

LMOPS, France

204 - Using surface-enhanced Raman scattering and multivariate analysis for the simultaneous multiplex detection and quantification of malodorous thiols

Amy Collieran¹, Cassio Lima¹, Yun Xu¹, Allen Millichope², Stephanie Murray², Royston Goodacre¹

¹University of Liverpool, United Kingdom; ²Unilever R&D, Port Sunlight, United Kingdom

205 - Novel OF2i@-Raman sensor for dynamic single particle analysis with high throughput for nano- and microparticles in liquids

Christian Neuper^{1,2}, Christian Hill^{2,3}, Harald Fitzek^{1,4}

¹Graz Centre for Electron Microscopy, Austria; ²Brave Analytics GmbH, Stiftingtalstraße 14, Austria; ³Gottfried Schatz Research Center, Division of Medical Physics and Biophysics, Medical University of Graz, Neue Stiftingtalstraße 2, Graz 8010; ⁴Austrian Institute for Electron Microscopy and Nanoanalysis (FELMI), Graz University of Technology (TU Graz), NAWI Graz, Steyregasse 17, 8010 Graz, Austria

206 - Miniaturised Raman spectrometer with real-time spectrum deblurring

Yurii Pilhun¹, Andrii Kutsyk¹, Oleksii Ilchenko^{1,2}

¹Lightnovo ApS, Birkerød 3460, Denmark; ²Technical University of Denmark, Kgs. Lyngby 2800, Denmark

207 - Optics miniaturization strategy without performance compromise for demanding Raman spectroscopy and microscopy applications

Oleksii Ilchenko^{1,2}, Yurii Pilhun², Andrii Kutsyk², Yaroslav Aulin², Konstantinos Stergiou², Sofus Boisen², Danylo Komisar^{1,2}, Anja Boisen¹

¹Technical University of Denmark, Kgs. Lyngby 2800, Denmark; ²Lightnovo ApS, Birkerød 3460, Denmark

208 - Raman spectroscopy: a rapid microbiological tool for the food and pharmaceutical industries?

Markus Lankers, Oliver Valet

Mibic GmbH & Co KG, Germany

209 - Expanding Space R&D Frontiers with Compact, Energy-Efficient Raman Spectrometer in NanoSats, CubeSats, and on Rovers

Marcus Skyum^{1,2}, Yaroslav Aulin¹, Oleksii Ilchenko^{1,2}, Yurii Pilhun¹, Andrii Kutsyk¹, Marco Veneranda³

¹Lightnovo ApS, Denmark; ²Technical University of Denmark, Denmark; ³Universidad de Valladolid, Spain

210 - Inline Analysis of Multicomponent Bioprocesses Using Raman Spectroscopy and RAMANMETRIX™

Joerg Weber¹, Andreas Latza¹, Oleg Ryabchykov^{1,2}, Darina Storozhuk², Oliver Valet¹

¹Biophotonics Diagnostics GmbH, Germany; ²Leibniz Institute of Photonic Technology Jena, Germany

211 - Quantitative evaluation of active ingredient skin penetration using confocal Raman spectroscopy: comparison of univariate and multivariate analysis

Soonjin Hong¹, Kuniko Kadoya¹, Rahul Mehta¹, Alireza Abdolvahabi², Joshua Rowe², Prithwiraj Maitra¹

¹Allergan Aesthetics, United States of America; ²AbbVie Inc., Irvine, CA, USA

213 - Tracking the Poisoning Tolerance of (Pt_{0.9}Rh_{0.1})₃V Intermetallics by In Situ Raman Spectra

Tao Shen

Xiamen University, China, People's Republic of

214 - Revealing the role of interfacial water and key intermediates at ruthenium surfaces in alkaline hydrogen evolution reaction

Xing Chen, Jin-Chao Dong, Jian-Feng Li

Xiamen University, China, People's Republic of

215 - Cyano-Hydrol Green derivatives: novel chromophores for expanding 9-cyanopyronin-based vibrational palette

Hiro Yoshi Fujiioka¹, Yuta Murao¹, Spencer Spratt², Minoru Kawatani¹, Yasuteru Urano^{3,4}, Yasuyuki Ozeki², Mako Kamiya^{1,5}

¹Department of Life Science and Technology, Tokyo Institute of Technology, Japan; ²Research Center for Advanced Science and Technology, The University of Tokyo, Japan; ³Graduate School of Pharmaceutical Sciences, The University of Tokyo, Japan; ⁴Graduate School of Medicine, The University of Tokyo, Japan; ⁵Living Systems Materialogy, Tokyo Institute of Technology, Japan

216 - Investigating the influence of particulate matter PM_{2.5} on human bronchial epithelial cells by Confocal Raman microscopy and imaging

Razane El Annan^{1,2}, Sandrine Villette¹, Sophie Lecomte¹, Imane Abbas², Manale Noun², Anthony Verdin³, Ghida Badran⁴

¹Univ. Bordeaux, CNRS, INP, CBMN, UMR 5248, F-33600 Pessac, France; ²Lebanese Atomic Energy Commission, NCSR, Beirut 11 -8281, Lebanon; ³Unité de Chimie Environnementale et Interactions sur le Vivant, UCEIV-EA 4492, FR CNRS, 3417, Univ. Littoral Côte d'Opale, Dunkerque, France; ⁴Universite Paris-Saclay, Inserm, Inflammation microbiome immunosurveillance, 91400 Orsay, France

217 - The challenge of tracking plastic fragments in the environment: Micro-RAMAN for the analysis of biodegradable plastics in compost

Dean I. Velikov¹, Frank von der Kammer¹, Patrizia Pfohl², Thilo Hofmann¹

¹University of Vienna, Austria; ²BASF SE, Ludwigshafen, Germany

218 - The unbiased interpretation of Raman spectra for NCM cathode materials based on two-dimensional correlation analysis

Huysang Kwon

Korea Research Institute of Standards and Science, South Korea

219 - Using time-resolved Raman spectroscopy to probe phonon dynamics and out-of-plane heat transport in layered quantum materials.

Loïc Moczko¹, Nupur Sontakke^{1,2}, René Bruikman¹, David Saleta Reig^{1,2}, Klaas-Jan Tielrooij^{1,2}

¹Department of Applied Physics, TU Eindhoven, Eindhoven, The Netherlands; ²Catalan Institute of Nanoscience and Nanotechnology (ICN2), BIST and CSIC, Barcelona, Spain

220 - Probing Deuteration-Induced Phase Separation in Supported Lipid Monolayers using Tip-Enhanced Raman Spectroscopy

Chengcheng Xu, Nsresh Kumar, Renato Zenobi

ETHZ, Switzerland

221 - Surface Enhanced Raman Spectroscopy for Soil Fungal Systems: Possibilities and Limitations

Mateusz Kasztelan^{1,2}, Barbara Palys², Milda Pucetaite¹

¹Lund University, Sweden; ²University of Warsaw, Poland

222 - Real-time integrated diagnosis and antimicrobial resistance infection profiling by Raman spectroscopy and machine learning

Grace McCurdy, Yoshiki Cook, Callum Highmore, Niall Hanrahan, Jeremy Webb, Sumeet Mahajan

Southampton University, United Kingdom

223 - Shaped-induced enhanced Raman scattering to enhance-SERS effect in manufacturing ultra-sensitive sensors

Jaciara Bär¹, Anerise de Barros¹, Matheus Gomes¹, Deysiane Santos¹, Carlos Bof Buffon², Flávio Shimizu³, Fernando Sigoli¹, Italo Odone Mazali¹

¹Institute of Chemistry - University of Campinas, Brazil; ²Physics Department, São Paulo State University, Rio Claro, SP, Brazil; ³Institute of Physics - University of Campinas, Brazil

224 - Quantitative Chemical and Physical Analysis of Heterochromatin in a Living Cell by Simultaneous Raman-Brillouin Imaging

Masato Machida¹, Atsushi Shibata², Kentaro Fujii³, Shinji Kajimoto¹, Takakazu Nakabayashi¹

¹Graduate School of Pharmaceutical Sciences, Tohoku Univ., Japan; ²Faculty of Pharmacy, Keio Univ., Japan; ³National Institutes for Quantum Science and Technology, Japan

225 - Cellulose-based Silver Nanoparticle Composite as Promising Flexible SERS Substrate

Barbora Štefková, Jakub Kořenek, Robert Pucek

Department of Physical Chemistry, Faculty of Science, Palacký University Olomouc, 17. listopadu 12, 771 46, Olomouc, Czech Republic

226 - Towards a SERS optical nose for VOC and gas sensing

Elle Wyatt, Marika Niihori, Sarah Sibug-Torres, Rakesh Arul, David-Benjamin Grys, Bart de Nijs, Jeremy Baumberg

NanoPhotonics Centre, Cavendish Laboratory, University of Cambridge

227 - Confocal polarized Raman microscopy to obtain orientation information on the alignment layer liquid crystal interfaces

Ruben Feringa, Bas Klement, Wesley Browne

University of Groningen, Netherlands, The

228 - Molecular structure and film morphology studies in neat films of organic polymeric semiconductors and blends with non-fullerene acceptors

Maria Karatzia¹, Kyriaki Koumenidou¹, Sri Harish Kumar Paleti², Klyto Katsara³, Derya Baran², Vassilis Papadakis³, Andreas Othonos⁴, Sotirios Christodoulou¹, Sophia Charalambous Hayes¹

¹Dept. of Chemistry, University of Cyprus, Nicosia, Cyprus; ²KAUST, Saudi Arabia; ³FORTH; ⁴Dept. of Physics, University of Cyprus, Nicosia, Cyprus

229 - Deciphering the wavepacket dynamics in TADF molecule using Transient absorption and ultrafast Raman Loss spectroscopy

Nishant Dhiman, Muhammed Munthasir A T, Pakkirisamy Thilagar, Siva Umapathy

Indian Institute of Science, India

230 - Screening and differentiation of Virus-like-particles using Raman spectroscopy

Ankit Dodla^{1,2}, Magdalena Giergiel², Aaron Mclean², Linda Earnest³, Julie McAuley³, Melissa Barrow³, Dale Godfrey³, Damian Purcell³, Shobha Shukla¹, Sumit Saxena¹, Joseph Torresi³, Bayden R Wood²

¹MEMS department, IIT Bombay, India; ²School of Chemistry, Monash University, Australia; ³Department of Microbiology and Immunology, Peter Doherty Institute for Infection and Immunity, The University of Melbourne

231 - In vivo and in vitro studies of efficient mephedrone adsorption over zirconium-based metal-organic frameworks

Przemysław Jodłowski¹, Klaudia Dymek¹, Grzegorz Kurowski¹, Kornelia Hyjek¹, Anna Boguszewska-Czubara², Barbara Budzyńska³, Anna Pajdak⁴, Łukasz Kuterasiński⁵, Witold Piskorz⁶, Piotr Jeleń⁷, Maciej Sitarz⁷

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232 - Auger-assisted secondary hot carrier transfer in a type I MoS₂/PtSe₂ heterostructure

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233 - Early screening of oral cancer from human saliva using surface-enhanced Raman plasmonic droplet assay platform

VINEETH PURAVANKARA, ARAVIND M, SAJAN DANIEL GEORGE

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234 - Cobalt-Based Electrochemical UV-SERRS of Interfacial Adenine Structure

Aušrinė Remeikienė, Martynas Talaikis, Ieva Matulaitienė, Gediminas Niaura

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235 - Use of Electrochemical SERS to Investigate Changes of Analgesic-Metal Surface Complexes

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236 - Monitoring Plasmon-Catalyzed Radical C-C Coupling Reaction on Immobilized Noble Metal Nanoparticles

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237 - Exploring the Effects of Labeled Ceramide on the Intracellular Response through Surface Enhanced Raman Scattering

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238 - Study of the Matrix Phase Evolution in Nitride Bonded Silicon Carbide Refractories using Raman Imaging

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239 - Development of coherent anti-Stokes hyper-Raman scattering (CAHRS) spectroscopy

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240 - In situ monitoring of cell surface proteins using SERS platforms

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241 - SERS-based diagnosis of a urinary tract infection using magnetic beads immobilized with gold nanoparticles

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242 - SERS-based acoustofluidic chip for rapid and sensitive detection of UTI-causing bacteria

Sohyun Park, Jaebum Choo

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243 - Electrophoresis-coupled SERS-LFA strips for the accurate separation and sensitive detection of sample matrix

Mengdan Lu, Jaebum Choo

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244 - Development of a wash-free detection of DNA using Marangoni force-induced three-liquid-phase gold nanoparticles self-assembly

Jaeuk Ahn, Jaebum Choo

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245 - Analysis of Separators for Li-S Batteries Using PHBHx

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246 - Raman spectroscopic analysis of aerobic Bacillus and anaerobic Clostridium species

Markus Salbreiter, Annette Wagenhaus, Petra Rösch, Jürgen Popp

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247 - Understanding Equilibrium of Cysteamine on Metal surface with Surface-enhanced Raman Scattering

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248 - Effect of halogen substitution on the mechanisms of phase transitions probed by vibrational spectroscopy

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249 - Differentiation of antimicrobial resistance groups via label-free Raman spectroscopy

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250 - Gold nanoparticles prepared in HEPES buffer as SERS-active substrates

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251 - Illuminating drug delivery: Localization and characterization of polymer-based nanoparticles in fibrotic liver cells

Julian Plitzko^{1,2}, Franziska Adermann^{3,4}, Thorben Köhler^{3,4}, Klea Mehmetaj^{4,5}, Stephanie Schubert^{3,4}, Adrian T. Press^{4,6,7}, Michael Schmitt¹, Michael Bauer^{4,5,6}, Juergen Popp^{1,2}

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252 - Aptamer-based detection schemes in SERS for the detection of pollutants in water

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253 - Microwave-Assisted Fabrication of Ag-NP Decorated TERS Tips with Enhanced mechanical Stability for Investigations in liquid environments

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254 - Discrimination of K1 and K2 serotypes of Klebsiella pneumoniae by Raman spectroscopy

María Gabriela Fernández-Manteca^{1,2}, Celia Gómez Galdós^{1,2}, Borja García García^{1,2}, Andrea Pérez Asensio^{1,2}, Domingo Fernández Vecilla³, María Siller Ruiz^{2,4}, María Pía Roiz Mesones^{2,4}, Nuria Fraile Valcárcel^{2,4}, Fidel Madrazo Toca², Luis Rodríguez-Cobo⁵, José Miguel López-Higuera^{1,2,5}, Jorge Calvo Montes^{2,4,6}, Alain A. Ocampo-Sosa^{2,4,6}, Adolfo Cobo^{1,2,5}

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255 - Towards plasmon-enhanced Raman spectroscopy of single molecular adsorbates with defined surface orientation

Simon Mennicken¹, Daniel Schäfer¹, Daniel Ohm², Saber Mehrpavar¹, Jan Neumann¹, Gebhard Haberhauer¹, Katrin Domke^{1,2}, Sebastian Schlücker¹

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256 - Integrated SERS-based microdroplet platform for marine biotoxin detection in water

Verónica Silva¹, Bernardo Albuquerque Nogueira¹, Miguel Chaves Sousa¹, Aitor Álvarez¹, Marília Santos¹, Sara Abade-Cela¹, Begoña Espiña¹, Laura María Salonen², Laura Rodríguez-Lorenzo¹

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257 - Raman spectroscopy – a valuable tool in studies of soft lead halide perovskites

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258 - Raman hyperspectral imaging of calcium carbonate polymorphs in fish otoliths

Hannah Marie Matthews¹, Laith Jawad², Jeffrey Low¹, Michel Nieuwoudt¹

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259 - Raman spectroscopy and associated techniques reveals abnormalities in RBC membranes in diabetic mice.

Kamil Kawoń¹, Natalia Wilkosz¹, Marzena Rugiel¹, Aleksandra Wilk¹, Marta Saluga¹, Katarzyna Bulat¹, Tetiana Stepanenko^{1,2,3}, Joanna Chwiej¹, Katarzyna Marzec^{1,4}

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260 - Photoswitching of Triptycene-Based Molecular Machines Followed by Raman Spectroscopy

Lucie Bednarova, Lenka Jurásková, Markéta Pazderková, Guillaume Bastien, Carina Santos Hurando, Milan Mašát, Lujo Matasovic, Igor Roncevic, Jiří Kaleta

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261 - Unearthing algal sea-crests by Raman microspectroscopy

Constanze Schultz¹, Trang Vuong², David Zopf^{1,3}, Anja Silge^{1,3}, Tobias Meyer-Zedler^{1,3}, Michael Schmitt³, Thomas Wichard⁴, Maria Mittag², Juergen Popp^{1,3}

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262 - The study of microenvironment on SERS substrate

Si-Qi Pan, Ping Luo, Guo-Kun Liu

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263 - FABRICATION OF UNIQUE SERS ACTIVE SUBSTRATES THROUGH INTEGRATION OF SILVER NANOCOLLOIDS AND MBBA LIQUID CRYSTAL MOLECULES ORGANIZED IN LANGMUIR-BLODGETT FILMS

Priyabrata Maity, Joydeep Chowdhury

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264 - Correlative TERS and nano-FTIR spectroscopy on virions

Savelii Filipkov¹, Tanveer Ahmed Shaik^{1,2}, Franziska Hornung³, Tanja Deckert-Gaudig^{1,2}, Stefanie Deinhardt-Emmer³, Volker Deckert^{1,2}

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265 - Development of Computational Models to Decipher Raman Optical Activity Spectra of G-quadruplexes

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266 - Detecting Folate Receptor α on single cancer cells: influence of the SERS nanotags design on the analytical performances

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267 - Ultrasensitive SERS detection of cytokines through specific binding and multiple reporter molecules

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268 - Temperature Measurement and Imaging of Fission Yeast Spores Using Stokes/anti-Stokes Raman Microspectroscopy

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269 - Nonlinear multimodal imaging towards endoscopic applications

Hyeonsoo Bae^{1,2}, Marko Rodewald², Tobias Meyer-Zedler^{1,2}, Karl Reichwald⁴, Bernhard Messerschmidt⁴, Orlando Guntinas-Lichius³, Michael Schmitt¹, Juergen Popp^{1,2}

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270 - Resonance Raman studies of triphenylamine-based acceptor-donor dyes

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271 - Unveiling surface properties of barium titanate through high-resolution tip-enhanced Raman spectroscopy

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272 - Structure Study on Binary Na₂O-TiO₂ Melts by in-situ High Temperature Raman Spectroscopy

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273 - Microplastics Monitoring in Dietary Supplements using Raman Spectroscopy: Omega-3 Polyunsaturated Fatty

Yeon Cheol Yu, Jong Hyun Choi, Hei-Seung Kang, Kyung Wook Kim, Jun Hyeok Kwon, Hyungsoo Kim, Moon-ik Chang

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274 - Raman and Tip-Enhanced Raman spectroscopy characterization of milk-derived extracellular vesicles: Toward nanoscale single vesicle analysis

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275 - Cocrystal quantification in tablets using transmission Raman spectroscopy with partial least squares-discriminant analysis

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276 - SERS spectroscopic study of cross-coupling reaction

Jan Kožíšek, Ivana Šloufová, Jiří Zedník

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277 - Decoding the Continuous Emission from Gold Nanoparticles in SERS Experiments

Jan Kutschera, Wouter Koopman, Felix Stete, Matias Bargheer

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278 - Study of phase transitions in SbSI-based thin films by temperature dependent micro-Raman spectroscopy.

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279 - Electrostatic Interactions by Bacteria in Hospital Wastewater: A Raman Spectroscopy Odyssey

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280 - Calcium acetate drug produced from Rapana venosa invasive gastropod shell: green process control assisted by Raman technology

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281 - Rapid antimicrobial susceptibility testing using the RamanBioAssay platform

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282 - Unveiling the Time-dependent Mineralogical Evolution of Calcium Aluminate Cement Hydration by In Situ Raman Imaging

Sinje Zimmer, Olaf Krause

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283 - A SERS-LFIA Approach for Multiplex Detection of High-Risk Pathogenic Bacteria in Point of Care Settings

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284 - Raman microspectroscopy in micro-structured chips for tracing single-cell metabolic stress responses in soil microbes

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285 - Application Perspectives of Nonlinear Spectroscopic Imaging with Broadband CARS

Carl Messerschmidt¹, Matteo Calvarese¹, Mohammadsadegh Vafaeinezhad^{1,2}, Rajendhar Junjuri¹, Anna Muehlig³, Denis Akimov¹, Tobias Meyer-Zedler¹, Michael Schmitt², Orlando Guntinas-Lichius³, Thomas Bocklitz^{1,2}, Juergen Popp^{1,2}

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286 - Rapid Fabrication and Bioapplication of Novel Planar SERS Substrates: Bridging the Gap Between High Sensitivity and Cost-Effectiveness

Vít Pavelka, Dušan Hemzal, Jan Hrbáč

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287 - Raman spectroscopy and structure of selected secondary metabolites in living Streptomyces cultures

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288 - Raman Stable isotope probing of single bacterial cells

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289 - SERS Characterization of anti-biotics drug molecule by using modified silver nanoparticles as substrate

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290 - Exploring Chiral Surface-Enhanced Raman Scattering through Analyte-Capped Colloidal Systems

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291 - Multiplexed SERS for wastewater treatment utilizing highly absorbent biogenic powders to eliminate environmentally realistic mixtures comprising inorganic pollutants

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292 - Impact of wet to dry transition in Surface-Enhanced Raman Scattering signal based on electromagnetic interaction by dynamic analyte behaviour

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293 - Towards CARS super-resolution in opaque media

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294 - Investigation of plasmon-mediated thiolate surface reactions

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295 - Machine Learning for detection of dissolved CO2 using porphyrins by surface-enhanced Raman scattering (SERS)

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296 - Raman Spectroscopy for Real-Time Nutrient Monitoring in Bioreactor Growth Media: Feasibility and Limitations

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297 - Moiré induced thermal conductivity in twisted-bilayer MoSe2

Manab Mandal¹, Nikhilesh Maity², Prahalad Kanti Barman¹, Ashutosh Srivastava², Abhishek K. Singh², Pramoda K. Nayak^{1,3}, Kanikrishnan Sethupathi¹

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298 - In situ Raman characterization of the conversion of preceramic polymer structures prepared by DLP 3D printing to silicon oxycarbide ceramics

Jakub Marchewka, Piotr Jeleń, Maciej Bik, Maciej Sitarz

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299 - Development of a Handheld Combined Raman-XRF System for Future Lunar Astronauts

Melissa McHugh, Ian Hutchinson, Hannah Lerman

University of Leicester, United Kingdom

300 - Unveiling Insights with Interpretable Models: Explainable AI in Raman Spectroscopy

Dipak Bhikaji Kumbhar, Dhanya Reghu, Siva Umaphathy

Indian Institute of Science, India

301 - Improved plasmonic detection of Resazurin on a solid copper patterned platform

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302 - Lizardite's Crystallographic Orientation Elucidated by Raman Spectroscopy

Jeremy S. Rooney¹, Matthew S. Tarling², Keith C. Gordon¹, Steven A. F. Smith¹, Marianne Negrini¹

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303 - Time-resolved Raman Spectroscopy using a CMOS SPAD array to separate Raman and fluorescent signals

Caitlin Shirley Tye, András Kufcsáka, Robert Henderson, Michael Tanner

Heriot-Watt University, United Kingdom

304 - Simultaneous SERS & SEIRA with Single Molecule Detection – Characterization of Plasmonically Resonant Structures with Optical Photothermal Infrared and Raman spectroscopy

Miriam Unger, Mustafa Kansiz

Photothermal Spectroscopy Corp, United States of America

305 - Organ-specific probing of mitochondrial and lipid properties in Caenorhabditis elegans with Raman microspectroscopy

Evelina Nikelshparg, Mariela Pavan, Anat Ben-Zvi

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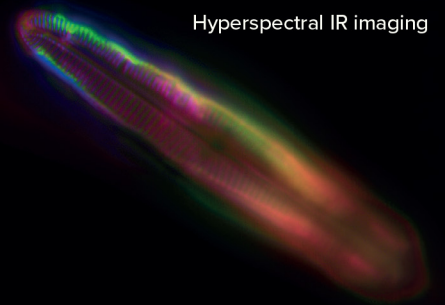
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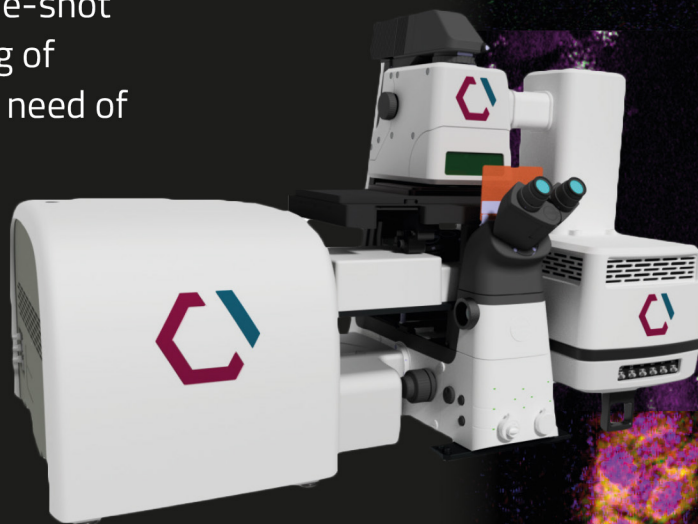


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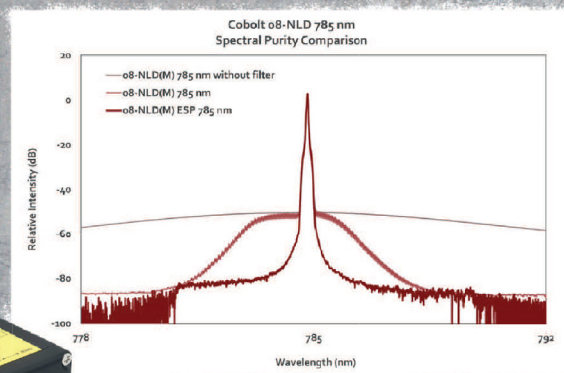
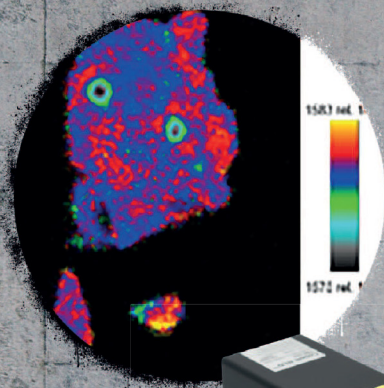
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