

Biomedical Raman Imaging

25-27 June 2023

Atlanta, GA

Program

25 June - Sunday

15:00 15:10 Welcome and Opening Remarks

Plenary Lectures - Chair: Katsumasa Fujita

15:10 15:50 Ji-Xin Cheng Stimulated Raman Photothermal Microscopy towards Ultrasensitive Chemical Imaging
15:50 16:30 Wei-Min A unified framework of molecular response under stimulated Raman scattering
16:30 17:10 Yasuyuki Ozeki Advancing multicolor SRS imaging with functional Raman probes and quantum light
17:10 17:50 Lu Wei Functional Stimulated Raman Imaging for Subcellular Bioanalysis

17:50 20:30

Reception and Posters

26 June - Monday

9:25 9:30 Day 2 Opening Remarks

Session 1: Diagnostics - Chair: Lingyan Shi

9:30 10:00 Tamiki Komatsuzaki On-the-fly Raman microscopy guaranteeing the accuracy of diagnosis by reinforcement learning
10:00 10:30 Fay Nicolson Optimization of SORS Instrumentation for Applications in Preclinical Cancer Imaging
10:30 11:00 Yasuaki Kumamoto High-throughput spontaneous Raman spectroscopy and imaging for biomedical applications
11:00 11:20 Break

Session 2: Biomedical and Metabolomics - Chair: Haruko Takeyama

11:20 11:50 Ayanjeet Ghosh Multiscale Spatially Resolved Vibrational Spectroscopy of Amyloid Aggregates
11:50 12:20 Jian Shu Decoding cell fates through single-cell genomics and imaging
12:20 12:50 Haruko Takeyama Challenge to the Microbial Single-Cell Omics: The Combination of Genomics and Raman Metabolomics

Lunch, Exhibits and Posters

12:50 13:50 Lunch

13:50 14:50 Posters and Exhibit

14:50 16:20

Panel Discussion - Technology Commercialization

16:20 16:45 Break

Session 3: Metabolomics (continued) - Chair: Lu Wei

16:45 17:15 Marcus Cicerone Raman Metabolomics with Broadband CARS
17:15 17:45 Lingyan Shi Multimodal imaging platform with SRS, MPF, and SHG for studying metabolism in aging and diseases

17:45 18:45

Posters and exhibition

27 June - Tuesday

8:55 9:00 Day 3 Opening Remarks

Session 4: Raman Probes - Chair: Wei Min

9:00 9:30 Mako Kamiya Activatable Raman probes utilizing enzyme-induced aggregate formation for selective ex vivo imaging
9:30 10:00 Ishan Barman On self-assembling intracellular optical reporters for imaging enzyme activity
10:00 10:30 Daniela Buccella Development of responsive vibrational probes for cellular analytes: metal ion and reactive species
10:30 10:50 Break

Session 5: Photothermal and Multimodal Imaging - Chair: Ji-Xin Cheng

10:50 11:20 Takuro Ideguchi Video-rate live-cell imaging with mid-infrared photothermal quantitative phase imaging (MIP-QPI)
11:20 11:45 Volker Schweikhard Label-free, chemically specific imaging with the Leica STELLARIS 8 CRS – A true multi-modal optical discovery instrument
11:45 12:10 Mustafa Kansiz Advances in Bio-Imaging using Multi-modal Sub-micron IR microscopy with simultaneous Raman & Fluorescence Imaging

Lunch and Exhibit

12:10 13:30 Lunch

Session 6: SRS Imaging - Chair: Yasuyuki Ozeki

13:30 14:00 Dan Fu Quantitative analysis with stimulated Raman scattering microscopy: challenges and opportunities
14:00 14:30 Krzysztof Brzozowski Raman Microscopy – towards Better Sensitivity and Specificity

Session 7: CARS Imaging - Chair: Marcus Cicerone

14:30 15:00 Charles Camp Quantitative, Real-Time Raman Signal Extraction from CARS Hyperspectral Imagery
15:00 15:30 Sandro Heuke Random illumination coherent anti-Stokes Raman scattering microscopy (RIM-CARS)
15:30 16:00 Kotaro Hiramatsu Fourier-transform coherent anti-Stokes Raman scattering (FT-CARS) for biological research
16:00 16:20 Break

Session 8: Spontaneous Raman Imaging - Chair: Tamiki Komatsuzaki

16:20 16:50 Katsumasa Fujita Improvement of the detection sensitivity in Raman microscopy
16:50 17:20 Nicholas Smith High-throughput high accuracy cell state discrimination by Raman analysis
17:20 17:50 Arno Germond Probing metabolic shifts via Raman imaging: from stem cells to improved food processing
17:50 18:00 Closing Remarks