



Workshop

FTIR Spectroscopy in Microbiological and Medical Diagnostics

Robert Koch-Institute, Berlin
October 25-26, 2007

Preliminary Program

Thursday, October 25th

- | | |
|---------------|---|
| 8:30 - 10:00 | Registration |
| 10:00 - 10:15 | Opening Remarks
Introduction (D. Naumann , RKI) |
| 10:15 - 10:35 | R. Dluhy (Athens, USA)
Novel nanoarray SERS substrates for high sensitivity
biomedical pathogen sensing and classification |
| 10:40 - 11:00 | V. Deckert (Dortmund, Germany)
Tip enhanced Raman spectroscopy (TERS) –
Applications in the life sciences |
| 11:05 - 11:25 | J. Kneipp (Berlin, Germany)
Intracellular applications of surface-enhanced Raman scattering |
| 11:25 - 11:55 | Coffee Break |
| 12:00 - 12:20 | A. Ismael (Ste. Anne de Bellevue, Canada)
Bacteria identification by infrared imaging spectroscopy |

- 12:25 - 12:45 **L. E. Rodriguez-Saona** (Columbus, USA)
High-throughput differentiation of spoilage bacteria and foodborne pathogens by infrared microspectroscopy and multivariate analysis
- 12:50 - 13:10 **M. Wennig** (Freising, Germany)
Complex artificial neural networks for identification of lactic acid bacteria
- 13:15 - 14:00 **Lunch**
- 14:00 - 14:20 **K. Maquelin** (Rotterdam, The Netherlands)
Raman spectroscopy in clinical microbiology
- 14:25 - 14:45 **R. Goodacre** (Manchester, U.K.)
Analysing abiotic perturbations to biological systems using vibrational spectroscopies
- 14:50 - 15:10 **O. Preissner** (Lisbon, Portugal)
Application of FT-IR spectroscopy and chemometrics for differentiation of *Salmonella enteritidis* phagotypes
- 15:15 - 15:35 **J. Popp** (Jena, Germany)
Micro-Raman spectroscopy of single bacterial cells
- 15:40 - 16:10 **Coffee Break**
- 16:10 - 16:30 **G. Sockalingum** (Reims, France)
Applications of FT-IR spectroscopy in medical mycology
- 16:35 - 16:55 **B. Wood** (Clayton, Australia)
Raman acoustic levitation spectroscopy (RALS) of living cells: Application to malaria diagnosis and phytoplankton research
- 17:00 – 17:20 **C. Wilhelm** (Leipzig, Germany)
Quantitative FT-IR spectroscopy in plant cells – The state of the art
- 17:25 – 17:45 **A. Naumann** (Göttingen, Germany)
FTIR spectroscopy and imaging of wood-destroying fungi
- 17.50 - 19.30 **Poster Session**

- P1 **B. Bird** (Boston, USA)
Infrared and Raman microspectroscopy of cell types in urinary cytology
- P2 **A. Bosch** (La Plata, Argentina)
FT-IR spectroscopy is a powerful tool for the characterization of microflora and exopolysaccharides recovered from kefir grains
- P3 **N. Büchl** (Freising, Germany)
Identification of food-borne yeasts by FT-IR-spectroscopy and artificial neural networks
- P4 **H. J. Byrne** (Dublin, Ireland)
Intercomparison of FTIR and Raman spectroscopy for medical diagnostics
- P5 **T. Chernenko** (Boston, USA)
Resonance Raman imaging sheds new light on the life cycle of *Plasmodium falciparum*
- P6 **C. Coutinho** (Porto, Portugal)
Classification of *Burkholderia cepacia* complex isolates by Fourier-transform infrared spectroscopy and chemometrics
- P7 **P. Gardner** (Manchester, U.K.)
Direct evidence of lipid translocation between adipocytes and prostate cancer cells with imaging FTIR microspectroscopy
- P8 **P. Gardner** (Manchester, U.K.)
Discrimination of cancer cell lines by reflection mode FTIR photo-acoustic spectroscopy
- P9 **M. Grube** (Riga, Latvia)
Relationship between the cell surface hydrophobicity and ethanol tolerance of bacteria *Zymomonas mobilis*
- P10 **R. M. Jarvis** (Manchester, U.K.)
Developments in metabolic fingerprinting and quantitative analysis using surface-enhanced Raman scattering
- P11 **P. Knief** (Dublin, Ireland)
Raman spectroscopy in the nano world - a useful probe for assessing nano toxicity?
- P12 **A. Kuhm** (Fellbach, Germany)
Subspecies differentiation of *Yersinia enterocolitica* strains using FT-IR

- P13 **Th. Mair** (Magdeburg, Germany)
FT-IR spectroscopy of the energy metabolism in yeast extract
- P14 **C. Matthäus** (Boston, USA)
Discrimination of marine bacteria species by Raman microscopy
- P15 **M. Miljkovic** (Boston, USA)
Spike removal and denoising of Raman spectra
- P16 **R. Pena** (Göttingen, Germany)
FTIR – a new tool to identify ectomycorrhizal species
- P17 **M. Prieto** (León, Spain)
Identification of *Salmonella* spp. using FT-IR: Correlation with serological and sequencing data
- P18 **M. Romeo** (Boston, USA)
Towards the standardisation of spectral cytology
- P19 **D. M. Rosu** (Berlin, Germany)
Investigation of biomolecular thin films using infrared synchrotron mapping ellipsometry
- P20 **R. K. Sahu** (Beer Sheva, Israel)
Molecular organization of *Streptococcus pneumoniae*: the FTIR microscopy approach
- P21 **M. Scholtes** (Rotterdam, The Netherlands)
Minimizing a-specific spectral variation in carotenoid signal for typing of MRSA by Raman spectroscopy
- P22 **J. Schubert** (Boston, USA)
Infrared microspectroscopy as a tool for the early detection of cervical cancer
- P23 **F. Schulte** (Berlin, Germany)
Vibrational spectroscopic characterization and identification of pollen
- P24 **I. T. Shadi** (Manchester, U.K.)
Chemical mapping of keloid progression using image analysis and FT-IR spectroscopy
- P25 **T. Smith-Palmer** (Antigonish, Canada)
The use of confocal Raman microspectroscopy for the analysis of biofilms

- P26 **S. van den Driesche** (Vienna, Austria)
Microfluidics as a tool for in-flow single cell positioning
- P27 **A. Walter** (Jena, Germany)
Investigation of biotic soil components by means of various spectroscopic methods
- P28 **H. F. M. Willems-Erix** (Rotterdam, The Netherlands)
Rapid typing of methicillin resistant *Staphylococcus aureus* by Raman spectroscopy
- P29 **O. Yantorno** (La Plata, Argentina)
Phenotypic expression in *Bordetella pertussis* biofilms: Fourier transform infrared (FT-IR) spectroscopic and proteomic approaches

19:30 - ?? **Dinner buffet**

Friday, October 26th

- 9:00 - 9:20 **M. Diem** (Boston, USA)
Detection of abnormalities in squamous cells
- 9:25 - 9:45 **Ph. Heraud** (Clayton, Australia)
Characterisation of the differentiation of embryonic stem cells into defined neural lineages using vibrational microspectroscopy
- 9:50 - 10:10 **C. Krafft** (Dresden, Germany)
Differentiation of individual human mesenchymal stem cells probed by FTIR microscopic imaging
- 10:15 - 10:45 **Coffee Break**
- 10:45 - 11:05 **G. Délérís** (Bordeaux, France)
FT-IR spectrometry and imaging for concentration measurements: a tool to explore cell metabolic status

- 11:10 - 11:30 **P. Rösch** (Jena, Germany)
Liquor investigation by means of Raman spectroscopy
- 11:35 - 11:55 **D. Moss** (Karlsruhe, Germany)
Investigating single living cells with synchrotron infrared microspectroscopy
- 12:00 – 12:20 **A. Kohler** (Ås, Norway)
Biochemometrics for the analysis of several data sets
- 12:30 - 13:15 **Lunch**
- 13:15 - 13:35 **A. Schmidt** (Ettlingen, Germany)
Validation of FTIR systems for the investigation of microorganisms
- 13:40 - 14:00 **A. Bosch** (La Plata, Argentina)
Infrared spectroscopic and molecular characterization of clinical and environmental atypical *Burkholderia cepacia* complex strains from Argentina
- 14:05 - 14:25 **J. W. Allwood** (Manchester, U.K.)
Investigating plant-pathogen interactions with FT-IR metabolomic fingerprinting and ESI-MS metabolomic profiling
- 14:30 - 14:50 **P. Lasch** (Berlin, Germany)
Characterization of highly pathogenic microorganisms by MALDI-ToF mass spectrometry and chemometrics
- 14:55 - ??
Final Discussion
Concluding Remarks (NN)

Aim

The workshop is intended to bring together scientists using and developing infrared and Raman spectroscopic techniques for the analysis of microbial, plant, animal or human cells, tissues, and body fluids. Following the lines of our former workshops in Berlin, a major point of discussion will be FT-IR applications in medical and other fields of microbiology. The aim of the meeting is also to facilitate the exchange of ideas, practical problem solutions and experiences.

Place and Time

Robert Koch-Institute
Nordufer 20, 13353 Berlin, Germany

Registration: October 25, 2007: 8:30 - 10:00

Beginning: October 25, 2007: 10:00

End: October 26, 2007: 15:30

Organisation

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Sponsoring

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