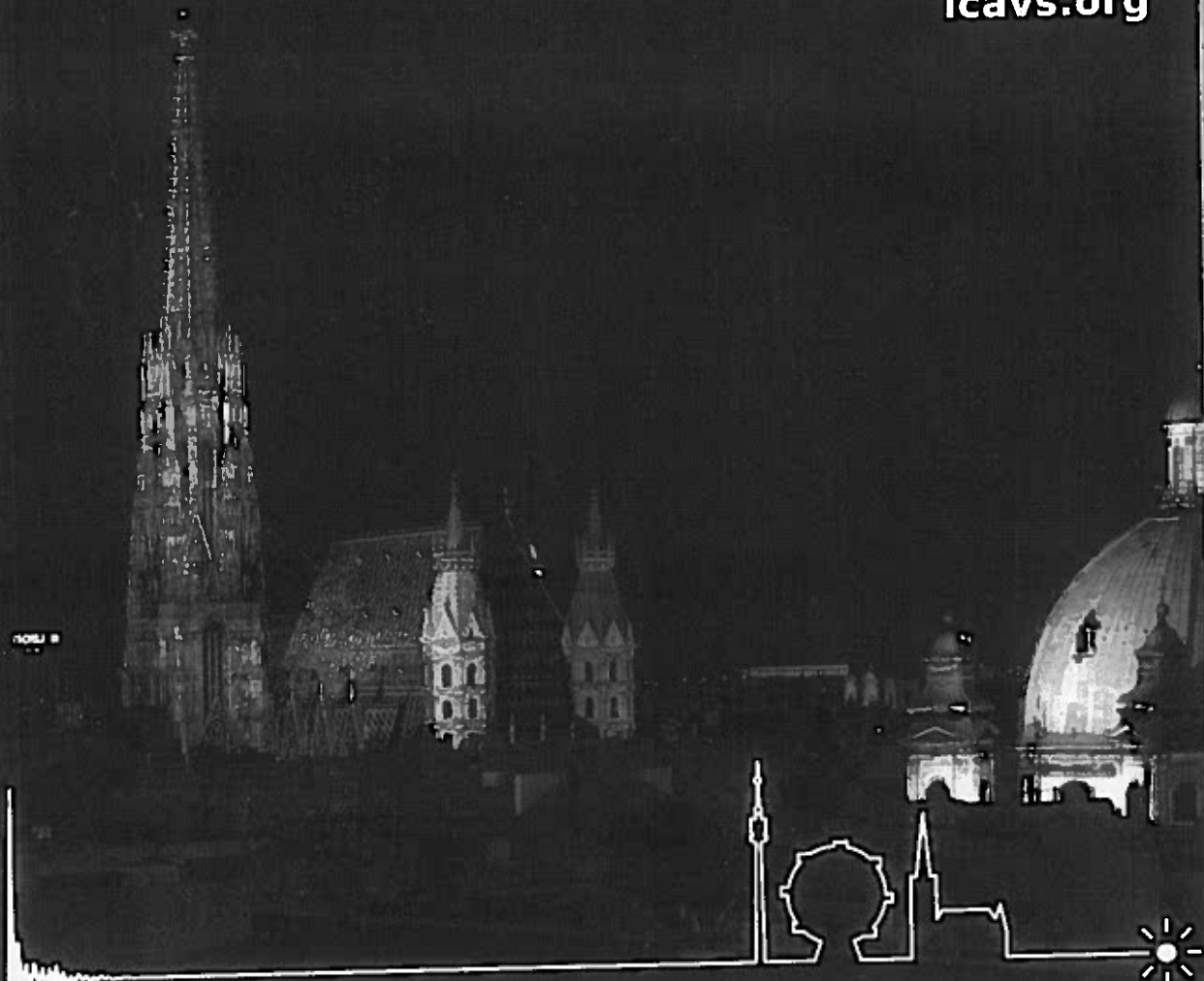


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Friday Invited

Friday, 10:40 - 12:00
Chair: Jim de Haseth

HS1

General Information

Program

Exhibition

Author Index

10:40
FR101 **Investigating the Binding of Metal Ion to Peptides and Inhibitors to Proteins Using Two-dimensional Infrared Spectroscopy**

Julia Davies, Hugh Sowley, Keith Willison, David Klug

A variant of two-dimensional infrared (2DIR) spectroscopy has been used to investigate several biological systems of interest. The first is the chelation of zinc ions to histidine residues in the amyloid beta peptide, which is of relevance to the formation of senile plaques in Alzheimer's Disease. The second system is the binding of an inhibitor to the tyrosine kinase domain of a fibroblast growth factor receptor, FGFR1, which is of therapeutic significance for a number of growth disorders and cancers.

11:00
FR102-inv **High Resolution FTIR Tomographic Imaging of Single Cells**

Kathleen Gough, Catherine Findlay

Tomographic imaging of single cells is achievable with a thermal source FTIR microscope. Diffraction-limited spatial resolution ($\sim 1.1 \mu\text{m}$ pixel edge) with focal plane array detection enables rapid 2D imaging comparable to the best synchrotron source FTIR microscopic imaging capability. Our new tomography accessory allows full positioning, alignment and focussing of any microsample. Automated rotation facilitates collection of projections at sufficient non-redundant angles to create the 3D reconstruction by back-projection of infrared images using modified CT and voxelated display algorithms (Matlab).

11:20
FR103-inv **A Mid-Infrared On-chip Sensor Array Based on Bi-functional Quantum Cascade Structures and Plasmonics**

Gottfried Strasser, Daniela Ristanic, Benedict Schwarz, Peter Reininger, Hermann Detz, Aaron M. Andrews, Tobias Zeerbauer, Donald MacFarland, Werner Schrenk

Quantum cascade lasers have proven to be powerful and compact devices for infrared spectroscopy. By the use of a bi-functional quantum cascade structure material for the generation and detection of light the realization of mid infrared on-chip sensors is possible. A specially designed intersubband material is working as QC laser for a given bias voltage and as a QC detector without any external bias. This concept allows liquid sensing at room temperature with a monolithically integrated sensor by a QC laser, a dielectrically loaded surface plasmon polariton waveguide as interaction section of the infrared light with the liquid, and a QC detector. Using DFB lasers allow the realization of a sensor array.

11:40
FR104-inv **Imaging Molecular Structure of Plant Cells by Confocal Raman Microscopy**

Notburga Gierlinger

During the last years Confocal Raman microscopy evolved as a powerful method to get insights into chemistry and structure of plant cells and cell walls with a spatial resolution of around 300 nm. Two-dimensional spectral maps can be acquired of selected areas and Raman images calculated by integrating the intensity of characteristic spectral bands or by using multivariate data analysis methods. This enables direct visualization of changes in the molecular structure and analyzing the spectra laying behind the chemical images reveals detailed insights into cell wall chemistry and structure.

