ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

LSU
laboratoire de spectroscopie ultrarapide

Institut des Sciences et Ingénieries Chimiques (ISIC)

Séminaire/Seminar

CARS Microscopy Made Simple: Label-free, Molecule-Specific Nonlinear Microscopy

Professor Albert Stolow

Steacie Institute for Molecular Sciences, National Research Council

We discuss a very simple yet high performance CARS microscopy, recently commercialized by Olympus, based on a single fs Ti:Sapphire oscillator combined with a photonic crystal fibre. By optimally chirping the fs pump and Stokes laser pulses, we achieve high quality multi-modal imaging (simultaneous CARS, two-photon fluorescence, and second harmonic generation) of live cells and tissues with a Raman tuning range from below 900 cm^{-1} to over 4000 cm^{-1}. Chirp as a control parameter permits simultaneous optimization of the spectral resolution and signal levels of these imaging modalities. We discuss recent technical developments such as all-fibre CARS microscopy, Hilbert Transform CARS, and time-correlated photon counting FLIM-CARS microscopy. We illustrate with applications of multi-modal CARS microscopy to label-free, molecule-specific biomedical and geological imaging.

Vendredi 5 octobre 2012 à 11 heures, en salle CH G1 495
Friday 5 October 2012, at 11 PM in room CH G1 495

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