Patrick Ferrand

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À: 'Patrick Ferrand'
Objet: Seminaire "Optique et applications" - LEICA scientific forum | Lundi 8/12/2008 16:00 | Paul French | Multi-dimensional fluorescence imaging...
Importance: Haute

Dear all,

Paul French, from Imperial College in London, will be the keynote speaker of our Decemer seminar. It is scheduled on
Monday 8th December at 4pm in Ponte Amphitheatre (close to Building FRESNEL).
Paul French's talk will be entitled:
"Multi-dimensional fluorescence imaging for label-free tissue contrast, molecular cell biology and High Content Analysis"

Paul French will be available the whole day for discussion. If you would like to talk with him, please send an e-mail to Pierre-François Lenne (lenne@fresnel.fr).

His seminar is organized in the framework of the Leica Science Forum, a seminar series sponsored by Leica. You could also meet the speaker during a **reception** (with snacks, wine and beverages) after the talk in Cotton Room (5:30pm)

Paul French's current research embraces the application of photonics technology to multidimensional fluorescence imaging and metrology applied, via a range of interdisciplinary collaborations, to the study and diagnosis of disease. This includes projects in molecular cell biology, drug discovery and clinical diagnosis.

Abstract:

Multi-dimensional fluorescence imaging for label-free tissue contrast, molecular cell biology and High Content Analysis
Fluorescence offers tremendous opportunities for molecular imaging using optical radiation but most fluorescence imaging is limited to recording fluorescence intensity to provide information concerning the localisation (distribution) of fluorescent labels – and the "target" proteins of interest to which they are attached. At Imperial we are developing technology to analyse fluorescence radiation with respect to wavelength, polarisation and, particularly, fluorescence lifetime, in order to maximise the information content of fluorescence imaging and provide enhanced molecular contrast. This talk will review recent progress applying fluorescence lifetime imaging (FLIM) and multi-dimensional fluorescence imaging (MDFI) to tissue imaging and microscopy.

Applying FLIM to autofluorescence of biological tissue can provide label-free contrast for non-invasive diagnostic imaging, as has been investigated in various tissues including atherosclerotic plaques, cartilage, pancreas and cervical tissue. FLIM and MDFI are also applicable to cell biology and drug discovery: hyperspectral imaging and FLIM can provide (quantitative) information concerning the local fluorophore environment and facilitate robust fluorescence resonant energy transfer (FRET) experiments while information concerning structure and rotational mobility may be obtained by applying polarisation resolution.

Our most recent work includes high-speed, automated optically-sectioned FLIM for High Content

Analysis, including FLIM-FRET and multiplexed FRET imaging, excitation-emission-lifetime-resolved imaging and the development of fibre-optic probe and endoscope-based instruments. We work with wide-field and scanning microscopy, implementing MDFI and optical sectioning with both single and multi-photon excitation. We have particularly exploited supercontinuum-based excitation sources for confocal and wide-field FLIM microscopy and have recently applied them to super-resolved imaging using stimulated emission depletion (STED) microscopy, to optical tomography and to a multidimensional fluorometer.

Website:
http://www.imperial.ac.uk/research/photonics/about/staff/paul_french.htm
http://www.imperial.ac.uk/research/photonics/