



a spotlight for enzymology

Frank Wien, Alexandre Giuliani, Valérie Rouam, Frédéric Jamme, Matthieu Réfrégiers



F-91192 Gif-sur-Yvette Cedex – France

DISCO a novel low energy synchrotron beamline at SOLEIL (FRANCE) will cover spectral ranges between VUV 60nm to 800nm [1.5-20eV]. Dedicated to biology and chemistry including biochemistry and biophysics it exceeds conventional laboratory light sources in terms of flux brilliance and intensity. By the end of 2007 three experimental stations will be installed with following objectives:

Circular Dichroism : For the determination of secondary structures of soluble and membrane proteins (1), nucleotides (DNA, RNA) in solutions. Characterisation of protein–protein, protein-ligand and protein-nucleic acid interactions.

Imaging : Observations of inter and intra cellular biochemical reactions in living cells; drugs distribution analysis within human tissues or individual cells and studies by auto-fluorescence of UV excitable molecules. (2)

Atmospheric pressure experiment: Identification of biological and organic molecules using atmospheric pressure photo-ionisation (APPI) as an ion source coupled to a mass spectrometry (Q-ToF). (3)

A presentation of the various applications of DISCO beamline will be given with a special focus on multi disciplinary approaches envisaged at SOLEIL. Examples will include compatibility between experiments such as Synchrotron Radiation Circular Dichroism (SRCD) and SAXS for macromolecular secondary and quaternary structure determination. Compatibility of experiments between IR and UV Microscopy. And last but not least expected contributions of the very novel APPI technique. I will report on the effort which is made to establish common calibration methods, reduce radiation damage and optimize for signal acquisition in view of standardisation, best practice protocols and reproducibility of results.

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 - (2) Kocanova, S., Hornakova, T., Hritz, J., Jancura, D., Chorvat, D., Mateasik, A., Ulichny, J., Refregiers, M., Maurizot, J. C., & Miskovsky, P. (2006). Characterization of the interaction of hypericin with protein kinase c in U-87 MG human glioma cells. *Photochemistry and Photobiology* 82, 720-728.
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