

Scientific Potential of Free Electron Lasers

Thursday 22nd April 2010, 10.00 – 17.00
The Royal Society, London, UK

XUV and X-ray Free Electron Lasers are set to revolutionize many areas of science. These unique sources of femtosecond X-rays have spectral brightnesses ten orders of magnitude greater than any synchrotron, and will have profound impact in biological imaging, structure determination, femtochemistry, condensed matter physics, and high energy density science. Recent results from both the FLASH XUV laser in Hamburg, and the hard X-ray laser (1.5Å) at LCLS at Stanford illustrate the enormous potential of these machines for significant step-changes in our ability to probe matter on atomic length and time-scales simultaneously.

The aim of this meeting is to bring together UK scientists from across all relevant disciplines who have an interest in exploring the use of these extraordinary sources for the formation of the UK FEL Users Science Group.

9.45 - 10.15 *Coffee*

10.15 – 10.40 Introduction, and High Intensity XUV-Matter Interactions at FLASH: **Professor Justin Wark, University of Oxford**

10.40 – 11.00 An example of AMO Science at LCLS: **Professor Jon Marangos, Imperial College**

11.00 – 11.30 LCLS - Science on the World's First Hard X-ray Laser: **Dr Bob Nagler, STFC/LCLS**

11.30 – 12.00 Pump-probe deformation of nanocrystals: **Professor Ian Robinson, UCL**

12.00 – 12.30 Prospects for Biological Imaging with Free Electron Lasers: **Dame Professor Louise Johnson, FRS, Diamond/University of Oxford**

12.30 – 13.30 *Lunch*

13.30 – 14.15 Science using FLASH and XFEL: **Thomas Tschentscher, XFEL**

14.15 – 15.00 Femtosecond Diffraction from Protein Nanocrystals at LCLS: **Professor John Spence, Arizona State University**

15.00 – 15.30 Breakout sessions: (i) **Life Sciences – led by Louise Johnson and John Spence** (ii) **Physical Sciences - led by Jon Marangos and Justin Wark**

15.30 -16.00 *Tea*

16.00 -16.45 Open discussion on way forward (Formation of UK FEL Users Group, Influencing Research Councils, The Way Forward...)

16.45 – 17.00 Summary and Closeout

17.00 *Finish*

To register visit: <http://conf.dl.ac.uk/event.asp?eventID=192>