

**O 93: Overview Talk: Wilfried Wurth**

Time: Friday 9:30–10:15

Location: S054

**Invited Talk**

O 93.1 Fri 9:30 S054

**New Science Opportunities with X-Ray Free-Electron Lasers**

— •WILFRIED WURTH — Physik Department und Center for Free-Electron Laser Science, Universität Hamburg — DESY Photon Science, Hamburg

New light sources based on linear accelerators such as the free-electron laser FLASH at DESY in Hamburg in the extreme ultraviolet, the Linac Coherent Light Source LCLS in Stanford and SACLA at SPring-8 in Japan in the x-ray regime, or FERMI at ELETTRA in Trieste as the first fully externally seeded free-electron laser provide ultrashort,

extremely powerful short wavelength pulses with unprecedented coherence properties.

With these new sources it is possible to extend the well-established x-ray spectroscopy and scattering techniques for the investigation of the static electronic and geometric structure of matter to probing their evolution after controlled excitation in the time domain.

The talk will give an overview on the physics of these sources and review recent time-resolved x-ray spectroscopy and imaging experiments illustrating the opportunities for the study of ultrafast dynamics at surfaces.