ASG Imaging for life

Many fields of research are in great need of imaging with differing contrasts and a range of length scales to study everthing from molecules and cells to organs and live organisms. Additionally, researchers today frequently use both integrative and correlative analysis methods to answer their sceintific questions. Lund University has great expertise in imaging and several excellent facilities suitable for both independent work and preparatory work for synchroton imaging and the execution of complementary analysis.

The aim of our ASG-work will be to bridge and make visible the expertise and structure at Lund University and in so doing contribute to its development into a world-leading melting pot for correlative imaging, using both synchrotron radiation and neutron radiation imaging. The group will also work to facilitate the construction of a beam line at MAX IV, called MedMAX dedicated to medical and biological research. MedMAX will become a unique instrument in its own right, and in the Lund ecosystem of imaging facilities. When it is completed in a few years, MedMAX together with ESS and the other imaging resources, will establish Lund as an imaging centre of excellence.

Members

Kajsa M. Paulsson (Coordinator)

Researcher, Department of experimental medical science
Faculty of Medicine, Lund University
kajsa_m.paulsson@med.lu.se
+46 46 222 41 67
+46 70 608 33 81
http://www.med.lu.se/english/expmed/research/antigen_presentation

Lars Dahlin

Freddy Ståhlberg

Jonas Tegenfeldt

Dan E. Nisson

Reine Wallenberg

Martin Bech

Karl Åström

Rajmund Mokso

Stephen Hall

Crister Ceberg

Gunnar Gouras

Markus Stroble

Imaging for Life seminar/Workshop

On 2nd of December, Giuliana Tromba from Elettra, Trieste, is holding a seminar/workshop on the SYRMEP Beamline: Medical Applications of Synchrotron Radiation

Imaging at Elettra

Seminar

ASG Imaging for life invite Giuliana Tromba from Elettra synchrotron, Trieste, to hold a seminar/workshop on the SYRMAP Beamline: Medical Applications of Synchrotron Radiation

At Elettra research is carried out at the SYRMEP beamline where synchrotron techniques in different contexts of diagnostic radiology is studied. Particular interest has been devoted to the application of the Phase contrast techniques for breast imaging.

In conventional radiology the image formation is related to the absorption properties of the sample. Image contrast is originated by a variation of density, composition or thickness of the sample and is based exclusively on the detection of amplitude variation of the transmitted X-rays. The main limitation of this technique is the poor enhancement of weakly absorbing details in soft tissue. The high intensity and high transverse coherence of radiation delivered from third generation synchrotron light sources like Elettra represent unique opportunity to investigate novel X-ray imaging approaches that can be extended out also to medical radiology. These techniques are based on the observation of the phase shifts produced by the object on the incoming wave. In the energy range of 15÷25 keV, the phase shift is up to 1000 times more sensitive to variation of the structure and composition of soft biological tissues when compared to absorption. Therefore it is possible to reveal phase effects even if the absorption is negligible. In the diagnostic radiology energy range three different approaches for phase effect-based techniques can be considered: the PHase Contrast (PHC) radiography, the Diffraction Enhanced Imaging (DEI) and the X-ray interferometry.

The event is organised by Imaging for Life ASG, MoReLife and the research school Imaging of 3D structures.