



Anders Bjorholm Dahl Inaugural lecture 21st June 2018

Title: Non-destructive Deep Discoveries – 3D Image Analysis

Abstract:

3D imaging methods based on deeply penetrating radiation allow looking inside materials and hereby understanding structural relations and functions. An essential key for unlocking the information hidden inside a material is automated 3D image analysis. Image analysis is often the bottleneck for new scientific discoveries because it requires highly skilled experts and is typically time consuming. With the large-scale microscopes, MAX IV synchrotron and the European Spallation Source, soon being operation in Lund, it will be possible to do imaging in 3D or even 4D at extremely high spatial and temporal resolution, which will make the basis for exciting scientific findings. In this talk, I will present examples of 3D image analysis research aimed at accurately quantifying structural properties of materials. Furthermore, I will outline my ideas for research in 3D image analysis methods. This include techniques allowing scientists with little experience in imaging to employ advanced analysis by utilizing their area knowledge for parameter learning. Involving the materials scientists in automating image analysis has great perspective for increasing the scientific and societal impact of imaging from large-scale facilities.