

Seminarium Departamentu Fizyki Materiałów

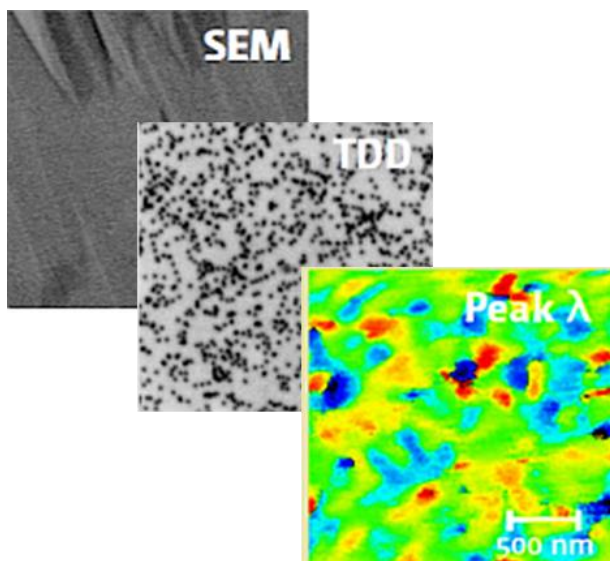
18 października 2019 (piątek), godz. 12:30
PNT-NCBJ, sala 223 (NEUTRON)

High-Resolution Quantitative Cathodoluminescence (CL) for Material Applications

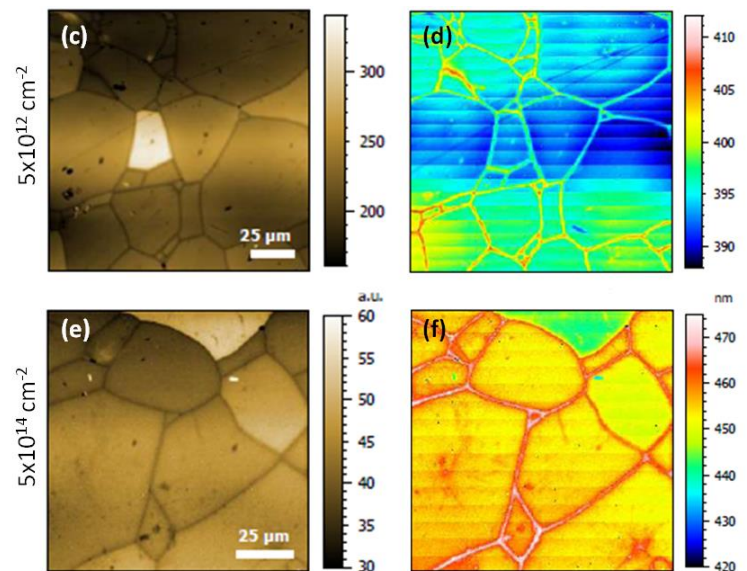
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High spatial resolution spectroscopic information may be acquired by using an electron beam in a Scanning Electron Microscope (SEM), exploiting a phenomenon called Cathodoluminescence (CL). Cathodoluminescence (CL) refers to the light emitted by any material under electron irradiation and can be used to perform non-destructive analyses of a broad range of materials comprising insulators, semiconductors, metals as well as inorganic and organic samples. This approach offers several advantages over usual optical spectroscopy techniques. The multimode imaging capabilities of the SEM enable the correlation of optical/structural/electrical properties (*via* CL) with surface morphology (*via* secondary electron mode) at the nanometer scale. In semiconductors and insulators, the CL spectrum gives local information on the electronic bandgap and defect states. Many examples will be presented during the talk such as the study of threading dislocation in GaN layers, the defect counting in epitaxial layers or the analysis of strain dislocation in composite materials.



Defect counting in epitaxial layers



Panchromatic images and peak spectral distributions in a polycrystalline sample

About Attolight: Attolight revolutionized the CL technique by integrating in his equipment a specific optical objective enabling a high collection efficiency over a large field of view (up to 300μm). The company is today the leader in CL tools for research applications and the sole provider of industrial equipment for semiconductor quality control.