

Seminarium Departamentu Fizyki Materiałów

15 maja 2019 (środa), godz. 11:30
PNT-NCBJ, sala 207 (MARIA)

Leveraging materials informatics towards advanced materials development

Dr Jaco Olivier

Centre for HRTEM, Physics Department, Nelson Mandela University, Port Elizabeth,
South Africa

Materials Informatics is an emerging field in materials physics utilizing methodologies derived from data science to yield new or unique quantitative information related to materials systems from experimentally gathered data. At the CHRTEM (Centre for high resolution transmission electron microscopy) advanced signal processing techniques, neural networks, dynamic time-resolved characterization, structural simulation and model-based extraction of materials systems properties are used to obtain repeatable quantitative information related to materials systems. The information derived may then be used to accurately optimize or assess materials manufacturing, development, synthesis or performance.

At the CHRTEM advanced materials development is supported within the framework of the materials development tetrahedron that links processing-structure-properties-performance. By leveraging the knowledge obtained from a materials informatics approach to the study of materials systems a significant reduction in the time taken from concept to prototype stage could be achieved. In this talk details related to the overarching operations philosophy employed at the CHRTEM and its synergy with the process of materials informatics using advanced electron microscopy will be discussed. Examples of CHRTEM involvement in different materials development projects will be presented.