On behalf of the

University of Vienna / Electronic Properties of Materials

we cordially invite you to the following talk

Dr. Jeremy Sloan

University of Warwick, Department of Physics, Coventry, UK

Crystallography and Functional Evolution of Atomically Thin Confined Nanowires

Abstract:

Encapsulated nanowires can be as small as a single atom in width and are the smallest one-dimensional materials. Their simplicity and robustness makes them ideal platforms for the study of fundamental properties of matter, such as phase transformations and the energetics of confined crystal structure formation. The encapsulating structure can be formed from zeolites or mesoporous phases, but carbon nanotubes in particular are ideal templates for forming and observing crystalline/non-crystalline transitions and molecular ordering either into chains or discrete species. These materials have tested, and continue to test, the state of the art in electron microscopy (i.e. HRTEM or STEM) investigations and their associated spectroscopies, in particular EELS. The extremely small size also lends these materials to *ab initio* (or *a posteriori*) theoretical investigations whereby their stability, electronic properties and properties can all be studied. This work is leading to ground-breaking and transformative new studies including the physical realisation of Peierls distortions, novel phonon optics and, most recently, spectacular modification of thermal properties. A further recent innovation is the observation and study of confined phase transformations at the smallest volume scale ever attempted, an essential precursor to the determination of the smallest scale that we can write information by the technique of PC-RAM [4-5].

Date: Friday, 20th July 2018, 11 a.m.
Location: Josef-Stefan-Lecture-Hall, 3rd floor, Boltzmanngasse 5, 1090 Vienna

Prof. Paola Ayala, Prof. Wolfgang Lang
Prof. Thomas Pichler