

## Open lecture

# 3D characterization of nanomaterials by electron tomography: how low can we go?

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**20 November 2018, 16:00**

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**TROC 3, Nobel St. 3, Room 303**

**(Multifunctional Zone)**



### **ABSTRACT:**

Nanomaterials play a key role in modern technology and society, because of their unique physical and chemical characteristics. The synthesis of nanomaterials is maturing but surprisingly little is known about the exact roles that different experimental parameters have in tuning their final properties. It is hereby of crucial importance to understand the connection between these properties and the (three-dimensional) structure or composition of nanomaterials.

New developments in the field of transmission electron microscopy (TEM) enable one to characterize nanomaterials at the atomic scale, not only structural, but also from chemical and electronic point of view. However, one should never forget that all these techniques only provide a two-dimensional (2D) projection of a three-dimensional (3D) object. To overcome this problem, electron tomography has been used in an increasing number of studies over the last decennium. Nevertheless, it is still not straightforward to push the resolution below the nanoscale in 3D. Another challenge is to go beyond the study of simplified test materials and to characterize nanomaterials under real-lifeconditions.