



東京大学微細構造解析プラットフォーム 公開講演会

**“In situ TEM studies of electrical, mechanical
and thermal properties”**

Prof. Eva Olsson

*Department of Physics, Chalmers University of Technology,
Gothenburg, Sweden*



In situ electron microscopy enables the direct observation and correlation between material structure and properties on small scales reaching the atomic level. Examples of important mechanisms that can be studied are those of transport properties of charges, heat, liquids and particles in complex structures and also of effects induced by light, mechanical strain and temperature changes.

The direct correlation on the small scale involving individual interfaces, defects and atoms provides access to new information about which microstructural constituents that are active in determining the material properties on the macro, micro, nano and atomic scale. New aspects of material properties and mechanisms not obvious from measurements on the macro scale can also be revealed due to the high spatial resolution. The knowledge is crucial for not only the understanding of the mechanisms that are involved but also for the design of materials and devices with tailored properties.

The need for high spatial resolution imaging and spectroscopy of both surfaces and internal structure can in many cases only be met by transmission electron microscopy (TEM) or a combination of electron microscopy and other techniques. TEM holders for in situ dynamic experiments and manipulation including studies of transport of charges and condensed matter further expand the dimensions of information that can be extracted. This talk will address method developments and results of electrical, mechanical and thermal transport measurements of carbon based materials (e.g. graphene and carbon nanotubes), metals and semiconductors. Different aspects of specimen geometries and electron beam effects for the correlation between structure and properties will also be discussed.

March 1 (Wed), 2017 10:30~12:00

**Main meeting room at Institute of Engineering Innovation, UT
(工学部総合研究機構 9号館1階 大会議室)**

Organizer: Prof. Yuichi Ikuhara Phone: 03-5841-7688