東京大学グローバルCOEプログラム　機械システム・イノベーション国際拠点

東京大学 THE UNIVERSITY OF TOKYO

GMSI Global Center of Excellence for Mechanical Systems Innovation

第75回　GMSI公開セミナー

Aberration-corrected scanning transmission electron microscopy (STEM)

Dr. Ondrej Krivanek, FRS

Nion Co., Kirkland, Washington State, USA
(www.nion.com)

日時：2011年3月15日（火）14:00 -15:30
会場：東京大学工学部9号館 1F 大会議室

要旨

Because of aberration correction, the nano-world we see through electron microscopes has become sharper, more detailed and more interesting – much like the world of a shortsighted person who's tried glasses for the first time. This seminar will review developments in aberration-corrected electron optics that have made the improved vision possible, and summarize recent progress in imaging of low Z materials such as graphene and nanotubes.

At 60 keV primary beam energy, aberration correction is now making possible electron probes of about 1.2 Å diameter. This is has proved very useful for atomic-resolution annular dark field (ADF) STEM imaging of light-Z materials susceptible to knock-on damage, such as carbon and boron nitride. The samples can withstand greater electron doses than at 100 keV and above, allowing better image statistics to be built up. Single light atoms (B, C, N, O) in a single sheet of BN or graphene can then be reliably detected, and their chemical type identified by their ADF intensity. Defects in graphene and atomic reconstruction at the graphene's edge can be deciphered atom-by-atom. At the same time, electron energy loss spectroscopy (EELS) is able to identify individual heavier atoms spectroscopically.

主催：　東京大学グローバルCOEプログラム「機械システム・イノベーション国際拠点」
本件連絡先：　東京大学大学院工学系研究科 総合研究機構ナノ工学研究センター　教授　幾原　雄一
E-mail: ikuhara@sigma.t.u-tokyo.ac.jp　Phone: 03-5841-7688
GCOE事務局　E-mail: gmsi-office@mechasys.jp　Phone: 03-5841-7437