

## Investigation of single-walled carbon nanotubes with LEEPS microscope

### Abstract

We image single-walled carbon nanotubes (SWCNTs) using a home-made low-energy electron point source microscope (LEEPS) at energies from 500 eV to 50 eV. The electron beams emitted from noble metal covered W(111) single-atom tip are highly coherent and exhibit a small opening angle. The samples after imaged with the LEEPS microscope are also checked with a transmission electron microscope (TEM). LEEPS images of individual SWCNTs and bundles of SWCNTs indicate that the interference pattern varies with the size of the SWCNT bundles. The fringe separation decreases with increasing bundle size, and images of individual SWCNTs exhibit the largest fringe separation. Theoretical simulations of the LEEPS images are underway to understand the mechanism of the contrast and the interference pattern.