



University of Nova Gorica, "Thursday Lectures"

doc. dr. Urška Lavrenčič Štangar
Vipavska 13, p.p. 301, SI-5001 Nova Gorica, tel.:05 3315 241, fax:05 3315 296, e-mail: urska.lavrencic@p-ng.si

INVITATION TO THE LECTURE

entitled

Structure and Electronic Properties of Nanobuds

dr. Abdou Hassanien

Nanotechnology Research Institute, AIST, Tsukuba, Japan

Thursday, March 8th 2007 at 15:00

Lecture hall P7 of the University of Nova Gorica (Rožna Dolina)

Dr. Hassanien will present microscopic investigation of carbon nanobuds material where fullerenes molecules are attached to single wall carbon nanotubes (SWCNTs). The interaction of fullerenes molecules with the sidewall of SWCNTs has been studied with high-resolution transmission electron microscopy (HRTEM), low temperature scanning tunneling microscopy (STM) and spectroscopy. Unlike physisorbed fullerenes, which are highly mobile under TEM observation, HRTEM images show stationary fullerenes indicating strong bonding with SWCNTs. Based on HRTEM images C60 molecules were identified as the predominant fullerenes species. Topographic STM images show also cage structure of fullerene molecules on SWCNTs that are stable against high bias imaging. Current tunneling imaging spectroscopy displays variation in the electronic properties in the vicinity of the fullerenes. The variation is strongly localized that SWCNT electronic states at 1.5 nm away are unaffected by the fullerenes attachment. Authors take this as indication that the overall electronic properties of SWCNTs are unaltered by the presence of fullerenes and therefore nanobud material may offer an excellent opportunity to chemically activate SWCNTs without compromising their electrical behavior. The lecturer will discuss possible functionalization routes to selectively decorate nanobud with active chemical groups to allow easily further chemical processing.

Ref.: A. Nasbulin et al , To appear in Nature Nanotechnology.

Kindly invited!