

# Atomic Structure Details of Nano-Carbon Materials & Their Implications

**Sumio Iijima**

Faculty of Science and Technology, Meijo University  
National Institute of Advanced Industrial Science and Technology  
Nanotube Research Center, SAINT and NEC,  
Meijo University, Nagoya, JAPAN

**A GEMSEC- CNT-CoE Sponsored Colloquium**  
Host: **Mehmet Sarikaya** ([sarikaya@u.washington.edu](mailto:sarikaya@u.washington.edu))

Time 12:30 p.m., Tuesday, March 16th:  
Place: Mueller Hall (MSE) #153 Auditorium

Nanoscience and nanotechnology deal with nano-scale structures of materials and, therefore, the knowledge and control of material structures at the atomic-resolution are essential. Modern electron microscopes facilitate characterization (*via* both imaging and spectroscopy) of materials at the atomic resolution. As examples, I demonstrate some latest results on structural characterization of carbon nanotubes,<sup>1-4</sup> graphene,<sup>5</sup> and boron nitride mono-layer films.<sup>6</sup> I would also like to introduce some of industrial applications of nano-carbon materials.

1. K. Suenaga, et al. *Nature Nanotech.* **2**, 358 (2007)
2. Y. Sato, et al., *Nano Lett.* **7**, 3704 (2007).
3. C. H. Jin, et al., *Nature Nanotech.* **3**, 17 (2008).
4. C. H. Jin, et al., *PRL*, **101**, 176102(1)-(4) (2008).
5. Z. Liu, et al., *PRL*, **102**, 015501 (1)-(4) (2009).
6. C. H. Jin, et al., *PRL*, **102**, 195505 (1)-(4) (2009).

*Professor Sumio Iijima is the discoverer of carbon nanotubes (CNT) (see ref. below). He has contributed to the physics of nanostructured material since 1970s, well before nanotechnology” as a concept existed, and acquired some of the first atomic resolution images of inorganic materials during the late 1970s opening the ways for high resolution electron microscopy imaging that led to the developments of, e.g., heterostructural semiconductors, the bases of today’s microelectronics (integrated circuits used, e.g., in lap-tops, cell phones, etc.). Some of his awards include Asahi Prize (1996), Japan Imperial Award (2002), Honda Frontier Award (2004), Foreign Associate (USA-National Academy of Sciences), The First Richard Smalley Research Award (2008), Kavli Prize of Nanoscience (2008), Order of Culture (2009). Iijima published > 1,000 papers, and received ~40,000 citations.*

*1<sup>st</sup> paper on CNT: S, Iijima et al., “Helical Microtubules of Graphitic Carbon,” *Nature*, **354**, 56-58 (1991). (~ 10,000 citations).*

