

The background of the discovery of carbon nanotubes

S. Iijima

Graduate School of Science and Technology, Meijo University,
National Institute of Advanced Industrial Science and Technology /Nanotube Research Center, and
NEC

Contact e-mail: ijimas@meijo-u.ac.jp

Any discovery in science has not been made without a certain background closely related to the discovery. The case of carbon nanotubes is not an exception. I would like to speak how the nanotube was discovered after my long research carrier. The carbon nanotubes were reported in 1991 for the first time but the most of people did not know what I have been doing before the discovery. I would like to emphasize the importance of my experiences with various nanostructured materials including carbon. Interestingly all of these materials are related to the carbon nanotubes in various aspects. Another primary factor of the discovery is an atomic structure characterization of the nanomaterials, which is performed by a high resolution electron microscope. Without this instrument there will be no chance for us to find carbon nanotubes. In this connection I was lucky to have had ample experiences with this instrument. I would like to present my experiences with mostly carbon materials in chronological order in my own research carrier, so that it will be understood that accumulation of these experiences leads to the discovery of the carbon nanotubes [1-4]

- 1) "High resolution electron microscopy of crystal lattice of titanium-niobium oxide", S. Iijima, *J. Appl. Phys.*, **42**, 5891-5893 (1971).
 - 2) "High resolution electron microscopy of phase objects: Observation of small holes and steps on graphite crystals", Sumio Iijima, *Optik*, **47**, 437-452 (1977).
 - 3) "Direct observation of the tetrahedral bonding in graphitized carbon black by high resolution electron microscopy", S. Iijima, *J. Crystal Growth*, **50**, 675-683(1980).
- "Helical micro-tubules of graphitic carbon", S. Iijima, *Nature*, **345**, 56-58(1991).