Sumio Iijima

2007 Balzan Prize for Nanoscience
For his discovery of carbon nanotubes, in particular the discovery of single-wall carbon nanotubes and the study of their properties.

Carbon Nanotubes: Structural Study and Applications in Biomedicine
Meijo University, Nagoya
Adviser for the General Balzan Committee: Nicola Cabibbo

Sumio Iijima's Balzan research project is composed of two parts:

1. The first part is concerned with the characterization of atomic-level structures and physical properties of carbon nanotubes (CNTs) and their related nano-structures, by means of in situ high-resolution electron microscopy (HR-TEM). The detail of the atomic structures of individual tubes has become increasingly important to understand their physical properties and growth behaviors where the atomic defects are believed to play an important role.

2. The second part deals with the basic characterization of the CNTs necessary for biomedical applications, namely, drug delivery systems (DDS). CNTs have advantageous properties with respect to conventional DDS materials, such as liposomes and polymeric systems. They can be modified physically and chemically to meet optimum conditions for loading drugs in the inner spaces of CNTs and releasing them at specific sites and timing.

Basically the program will be conducted at Meijo University, Nagoya, Balzan Prizewinner Sumio Iijima's affiliation from 2008 to 2010. Some research will be performed at the Research Center of Nanocarbon Materials at the National Institute for Advanced Industrial Science and Technology (AIST), Tsukuba, a governmental organization which is also directed by Iijima.

Statement by the Prizewinner: *I am the first from Japan to receive this honorable Prize. Once again this confirms the Foundation's truly international view of humanity as well as its cultural motivation. My winning the Balzan Prize will make it possible to encourage young researchers in Asian countries as well, and also I thank the Foundation for its commitment to young scientists so that they can explore their own research programs, which involves young people in the hopes of understanding nanoscience and utilizing it for our society.* Sumio Iijima (Berne, 23.11.2007)