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Symposium U: Organic and Inorganic Nanotubes - From Molecular to Submicron Structures

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Nanotubular structures have emerged to a highly versatile low-dimensional material system. More importantly, researchers have developed self-organizing and catalytic synthesis techniques with high yield and purity prerequisite for technological applications. The potential applications of organic and inorganic nanotubes are currently envisioned for integrated systems, nanophotonics, catalyses, biological and medical applications.

This symposium will bring together scientists from the carbon nanotube community with the fast-growing research fields on organic and inorganic nanotubes, e.g., from biomaterials, polymers, metals, or semiconductors. Multicomponent nanotubes can exhibit complementary properties, e.g., optical and magnetic properties with high affinities to biological species. Molecular layer or multilayer nanotubes can be functionalized by adsorption of different kinds of molecules on the interior and exterior surfaces for biotechnology applications, while, e.g., concentric multilayer magnetic tubes may be used in magneto-electronic devices. Nanotubular devices as well as hybrid systems based on inorganic and organic nanotubes will be discussed in this symposium.

Session Topics

Session topics of the symposium will include:

- Carbon nanotubes, inorganic nanotubes based on, e.g., metals, semiconductors, and oxides
- Organic nanotubes, e.g., polymer nanotubes and nanotubes based on biomaterials
- Multilayered and hybrid nanotubes
- Characterization of fundamental physical and chemical properties in nanotubes
- Organic/inorganic nanotubes for electronics, magnetics, photonics, thermoeletrics, superconductors, and dielectrics
- Nanotubes as actuator, sensor, and electromechanical devices (NEMS)
- Functionalization and bioconjugation of organic and inorganic nanotubes
- Nanotube applications in biotechnology and medicine
- Integration of nanotubes in conventional and future electronic devices

Joint Session

A joint session is anticipated with Symposium BB: *Mechanotransduction and Engineered Cell-Surface Interactions*.

Invited Speakers

Invited speakers include: **Joerg Appenzeller** (IBM T.J. Watson Research Ctr.), **Erik Bakkers** (Philips Research Labs., The Netherlands), **Frank Caruso** (Univ. of Melbourne, Australia), **Hicham Fenniri** (Univ. of Alberta, Canada), **Andreas Greiner** (Univ. of Marburg, Germany), **Sumio Iijima** (NEC Corp., Japan), **Ariga Katsuhiko** (National Inst. for Materials Science, Japan), **Shunsaku Kimura** (Kyoto Univ., Japan), **Michael L. Klein** (Univ. of Pennsylvania), **Roger Koeppe**

(Univ. of Arkansas), **Nina Kovtyukhova** (Pennsylvania State Univ.), **Stefan Matile** (Univ. of Geneva, Switzerland), **Catherine J. Murphy** (Univ. of South Carolina), **Virgil Percec** (Univ. of Pennsylvania), **Toshimi Shimizu** (National Inst. of Advanced Industrial Science & Technology, Japan), **Samuel Stupp** (Northwestern Univ.), **David Tirrell** (California Inst. of Technology), **Peidong Yang** (Univ. of California-Berkeley), and **Chongwu Zhou** (Univ. of Southern California).

Symposium Organizers

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