
HL 94: Invited Talk Yong Lei

Time: Thursday 11:00–11:30

Location: POT 006

Invited Talk HL 94.1 Thu 11:00 POT 006
Template-realized three-dimensional functional nanostructures of semiconductors for high-performance device applications — ●YONG LEI — Institute of Physics and IMN, Ilmenau University of Technology, Germany

With the device miniaturization, functional nanostructures become the foundation of modern and future devices. Comparing to planar nanostructures, three-dimensional (3D) nanostructures have extremely large surface areas and high structure densities, hence the realization of 3D nanostructures presents an important task for nanotechnology research. To address this challenging point, template-based 3D nanostructuring techniques with scalable, parallel and fast fabrication processes have been developed in our group. Using these techniques,

different 3D semiconductor nanostructures are achieved with advantageous features including perfect regularity of large-scale nanostructure arrays, high density, scalable and parallel fabrication processes, and cost-effectiveness [1], which are highly desirable for device applications. More importantly, the obtained 3D nanostructures have high structural controllability, which makes these 3D nanostructures good systems for investigating and optimizing their physical properties. Using these well-defined semiconductor nanostructures, high performance devices have been realized, mainly for energy-related applications including supercapacitors and solar water splitting devices. These achievements indicate the high potential and importance of the 3D nano-structuring techniques both for basic research and for device applications.

[1] Y. Lei, et al., Chem. Soc. Rev., 40, 1247 (2011).