



Synthesis of Nanostructured SnO₂ by Electrochemical Anodization

by Mr. Md. Anower Hossian

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Time: 12:00pm to 1:00pm

Venue: EA-02-11 (Executive Seminar Room)

Abstract

SnO₂ is a stable and large band gap semiconductor which is well known for various applications, such as electron conducting material in optoelectronic devices and anodic material in lithium-ion batteries, etc. It has been shown that the size and morphology of the semiconductor have strong effect on its electrical and optical properties and as a result, the performance of the devices. Various methods have been employed to synthesize nanostructured SnO₂ such as wet chemistry method (sol-gel and hydrothermal), chemical vapour deposition (CVD), spray pyrolysis, magnetron sputtering, pulsed laser deposition (PLD), thermal evaporation and microwave irradiation processes, etc. SnO₂ nanocrystals of different morphologies have been prepared with various methods, while they are limited to high temperature, hydrothermal and template-assisted methods. Electrochemical anodization is a facile template-free method to synthesize various semiconductor nanostructures. In my preliminary study, the facile method was employed to prepare various SnO₂ nanostructures. Mesoporous SnO₂ film and monodispersed SnO₂ polyhedra with tunable size have been prepared by changing anodization voltage and electrolyte conditions. As the electrochemical cell can operate non-intermittently, this method is suitable for continuous production of nanostructured SnO₂ materials, which is important for large scale practical applications.

Mr. Md. Anower Hossian **Speaker**

Mr. Md. Anower Hossian obtained his bachelor's degree in Mechanical Engineering from Bangladesh University of Engineering and Technology in 2007. Now he is PhD candidate and is working under the supervision of Dr. Wang Qing in the Department of Materials Science and Engineering at NUS. His research interest focuses on synthesis of nanostructured SnO₂ by electrochemical anodization and its application in devices.

Dr Xue Jun Min **Host**

All are Welcome!