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Surface effect of ZnO Nanostructures and its Application in Ultrasensitive Chemical/Photo/Bio Detection

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This talk presents some interesting topics addressing the surface effect on physical properties and potential applications of nanostructured ZnO. The surface effects including surface band bending, chemisorption/photodesorption/biosorption near surfaces, and native surface defects/states are more pronounced in the nanostructures than that in thin film and bulk counterparts due to the structural uniqueness and the ultrahigh surface-to-volume ratio of ZnO nanostructures. The surface effect constituting the basis for developing novel applications of ZnO nanostructures trigger an increase of interest from understanding on how the physical properties are affected by shrinking dimension or size of ZnO to putting the 1D ZnO nanodevices for ultrasensitive chemical/photo/bio detection in practice.

Biography

Prof. Jr-Hau He joined Institute of Photonics and Optoelectronics, and Department of Electrical Engineering at National Taiwan University since 2007. He puts all his efforts into the design new nanostructured architectures for the next generation of nanodevices. Dr. He's group is also currently involving in fundamental physical properties of the nanomaterials. Dr. He has authored over 50 peerreviewed publications in journals and over 100 presentations in international conferences. His works have been highlighted by over 20 scientific magazines such as *Nature, Chemical & Engineering News, and Nano Today.* He serves as an editorial board member of *Journal of Nanoengineering and Nanomanufacturing*.