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Zinc Oxide Nanostructures: Synthesis and Characterization

Guest Editor:

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Message from the Guest Editor

Due to its excellent properties, ZnO is widely used for various potential applications such as catalysis, solar cells, ultraviolet (UV) lasers, light emitting diodes, photo-detectors, sensors (chemical, bio- and gas), optical and electrical devices and so on. Among various applications, the use of ZnO nanomaterials as a photocatalyst has particular interest due to their large surface area; wide band gap; ease of fabrication and cost effective synthesis; biocompatible and environmentally benign nature.

More specifically, the nanostructured ZnO semiconductor used as photocatalytic degradation material against environmental pollutants has also been extensively studied, because of its advantages of non-toxic nature, low cost and high reactivity. Furthermore, the synthesis of large-scale arrayed 1D ZnO nanostructures, including nanowires, nanorods, nanobelts and whiskers, is an important step for the fabrication of functional nano/microdevices. Finally, Magnetic ion-doped ZnO quantum dots (QDs) have been targeted as promising candidates for the implementation of novel technologies, such as in spintronic and quantum computation.

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