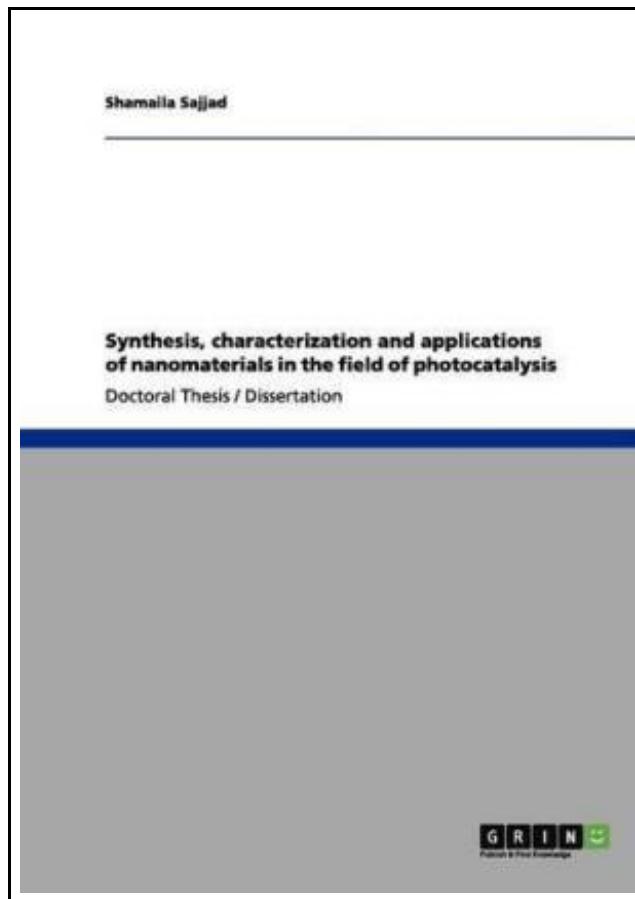


# Synthesis, Characterization and Applications of Nanomaterials in the Field of Photocatalysis



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*(Kevin Bergstrom Sr.)*

## SYNTHESIS, CHARACTERIZATION AND APPLICATIONS OF NANOMATERIALS IN THE FIELD OF PHOTOCATALYSIS

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GRIN Verlag. Paperback. Book Condition: New. Paperback. 176 pages. Dimensions: 8.3in. x 5.8in. x 0.4in. Doctoral Thesis Dissertation from the year 2011 in the subject Chemistry - Materials Chemistry, grade: -, East China University of Science and Technology (-), language: English, abstract: Considerable effort has been made to design, fabricate, and manipulate nanostructured materials by innovative approaches. The precise control of nanoscale structures will pave the way not only for elucidating unique size/shape dependent physicochemical properties but also for realizing new applications in science and technology. Nanotechnology offers unprecedented opportunities for improving our daily lives and the environment in which we live. This thesis mainly describes recent progress in the design, fabrication, and modification of nanostructured semiconductor materials for environmental applications. The scope of this thesis covers TiO<sub>2</sub>, Bi<sub>2</sub>O<sub>3</sub> and BiOCl materials, focusing particularly on TiO<sub>2</sub>-based nanostructures (e. g. , pure, doped, coupled, mesoporous, hierarchically porous, and ordered mesoporous TiO<sub>2</sub>). Mesoporous titania is of particular interest since this class of materials possesses well-defined porosity and large specific surface areas. For photocatalytic degradation of organics, these desirable properties are anticipated to improve the efficiency. So in the first part of work, I have synthesized the mesoporous titania by using poly ethylene glycol as a template in dilute acetic acid aqueous solution by hydrothermal process and investigated the effect of PEG molecular weights and thermal treatment on the resultant structure and photocatalytic activity. When the molecular weights of PEG vary from 600 to 20,000, the particle sizes of mesoporous-TiO<sub>2</sub> structure decrease from 15. 1 to 13. 3 nm and mean pore sizes increase from 6. 9-10. 6 nm. The activities of these mesoporous-TiO<sub>2</sub> photocatalysts prepared by using PEG are evaluated and compared with Degussa P-25 using chloro-phenol as a testing compound. . . . This item ships from multiple locations. Your book...



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