

## **Synthesis and characterization of nanoporous, nanorods, nanowires metal oxides**

**Author(s):** Pavasupree, S (Pavasupree, S); Suzuki, Y (Suzuki, Y); Pivsa-Art, S (Pivsa-Art, S); Yoshikawa, S (Yoshikawa, S)

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### **Abstract:**

Mesoporous high surface area and high crystallinity MO<sub>2</sub> (M = Ti, Ce, Zr, and Hf) and their mixed oxides powders were synthesized by a modified sol-gel method using laurylamine hydrochloride, metal alkoxide and acetylacetone. The prepared powders had a crystalline size of about 5-15 nm, a specific surface area of 44-80 m<sup>2</sup>/g, and a narrow pore size distribution with average pore diameter of about 3-6 nm. One-dimensional (1D) nanostructured (nanorods and nanowires) metal oxides were also successfully synthesized. These synthesis methods provide simple routes to fabricate nanostructured materials under mild conditions. These materials are promising for chemical and energy-related applications such as catalysts, and semiconductors in dye-sensitized solar cell. (c) 2005 Elsevier Ltd. All rights reserved.

### **Addresses:**

1. Kyoto Univ, Inst Adv Energy, Kyoto 6110011, Japan
2. Rajamangala Inst Technol, Dept Mat & Met Engn, Fac Engn, Pathum Thani 12110, Thailand

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