



Shah, M.A., Asiri, A.M.

**Synthesis and characterization of  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> nanorods by a simple reaction of iron and water**

(2009) *International Journal of Modern Physics B*, 23 (10), pp. 2323-2327.

<sup>a</sup> Department of Physics, Faculty of Science, Taif University, Post Box 888, Taif, Saudi Arabia

<sup>b</sup> Department of Chemistry, Faculty of Science, King Abdul Aziz University, P.O. Box 80203, Jeddah, 21589, Saudi Arabia

**Abstract**

A soft approach has been described for the formation of  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> nanorods by simple reaction of iron with water at a very low temperature range of 100-300°C. It is shown that the nanorods have diameters ranging from 50 - 80 nm, and their typical lengths are in the range of 5 - 10  $\mu$ m. The chemical composition and crystalline structure of nanorods were investigated by various characterization techniques. The initial formation and subsequent growth of  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> nanostructures may be explained by the iron metal corrosion mechanism. © 2009 World Scientific Publishing Company.

**Author Keywords**

Corrosion; Iron powder; Nanomaterials; Synthesis

**ISSN:** 02179792