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## Environmental remediation of Direct Blue dye solutions by photocatalytic oxidation with cuprous oxide

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### Abstract

A simple hydrothermal route has been developed to synthesize shape-controllable Cu<sub>2</sub>O from starting materials of CuCl<sub>2</sub> center dot 2H(2)O and NaOH by changing the hydrothermal temperature from 80 to 140 degrees C. Cu<sub>2</sub>O nanorods, a mixture of nanorods and nanocubes or nanocubes have been synthesized by controlling the hydrothermal temperature. The experiments demonstrate that the hydrothermal temperature is an important parameter that may determine whether the Cu<sub>2</sub>O is shaped as nanorods, a mixture of nanorods and nanocubes or nanocubes. The products were characterized with X-ray diffraction (XRD), ultraviolet and visible spectroscopy (UV-vis), transmission electron microscopy (TEM) and surface area measurements. Furthermore, the photocatalytic performance of Cu<sub>2</sub>O was measured in the degradation of Direct Blue dye with visible light. (C) 2013 Elsevier B.V. All rights reserved.

### Keywords

**Author Keywords:** Cuprous oxide; Visible photocatalyst; Removal of Direct Blue dye

**KeyWords Plus:** VISIBLE-LIGHT IRRADIATION; PHOTOELECTROCHEMICAL PROPERTIES; TiO<sub>2</sub> NANOPARTICLES; CU<sub>2</sub>O NANOWIRES; FILMS; CU<sub>2</sub>O; ELECTRODEPOSITION; DEGRADATION; FABRICATION; TRANSITION

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