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## Visible Light Photocatalytic Degradation of 2-Chlorophenol in Wastewater Using Copper Selenide Nanorods

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### Abstract

Copper selenide was prepared by a simple hydrothermal route and its shape was controlled by changing hydrothermal temperature from 100 to 160 degrees C. Different characterization techniques such as transmission electron microscopy, X-ray diffraction, UV-visible diffuse reflectance spectroscopy, X-ray photoelectron spectroscopy and BET specific surface area were used for the chemical composition, morphological structure, and optical properties of the photocatalysts. Shape of copper selenide, which was prepared at 100 degrees C hydrothermal temperature is nanorods; mixture of nanorods and nanocubes shapes were obtained when hydrothermal temperature is 120 and 140 degrees C; and nanocube shape was obtained when used temperature of hydrothermal 160 degrees C. The photocatalytic activity of copper selenide was studied for removal of 2-chlorophenol (2-CP) using visible light. Parameters affecting the photocatalytic performance of the copper selenide photocatalyst were studied. Copper selenide photocatalyst, which was prepared at 100 degrees C has the highest photocatalytic activity.

### Keywords

**Author Keywords:** [Copper Selenide](#); [Visible Photocatalyst](#); [2-Chlorophenol](#)

**KeyWords Plus:** [THIN-FILMS](#); [TiO2 NANOPARTICLES](#); [NANOWIRE ARRAYS](#); [BLUE-DYE](#); [TEMPERATURE](#); [GROWTH](#); [PENTACHLOROPHENOL](#); [Cu2Se](#)

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