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# Polyol Synthesis of Ag-Doped Copper Oxide Nanoparticles as a Methylene Blue-Degrading Agent

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**Abstract:** The use of metal oxide nanomaterials as photocatalysts for wastewater treatment has received significant attention in recent years due to their unique physicochemical properties. In this study, we use a polyol-mediated refluxing method to synthesize silver-incorporated copper oxide nanomaterials (Ag@CuO NMs). The use of tetra butyl ammonium bromide (TBAB) as a capping agent and ethylene glycol as a reducing agent for Ag+ to Ag is elaborated upon. The prepared Ag@CuO NMs were tested for their ability to degrade water pollutants, specifically methylene blue (MB) dye. Two different Ag contents, weights of 3% and 5%, were used to produce modified CuO-based nanomaterials. The crystalline structures of the NMs were characterized via XRD diffraction, and the morphology of the materials was investigated using FE-SEM. The optical properties were studied using UV-vis spectroscopy. The photocatalytic activity of the Ag@CuO NMs was evaluated by analyzing the degradation of MB dye when exposed to UV-visible light. Our results showed that the 5% weight Ag@CuO NM sample exhibited the most efficient degradation activity against MB dye. Therefore, these nanomaterials hold potential for photocatalytic applications, particularly for wastewater purification.

**Keywords:** methylene blue; photocatalytic activity; refluxing method; Ag@CuO Ns



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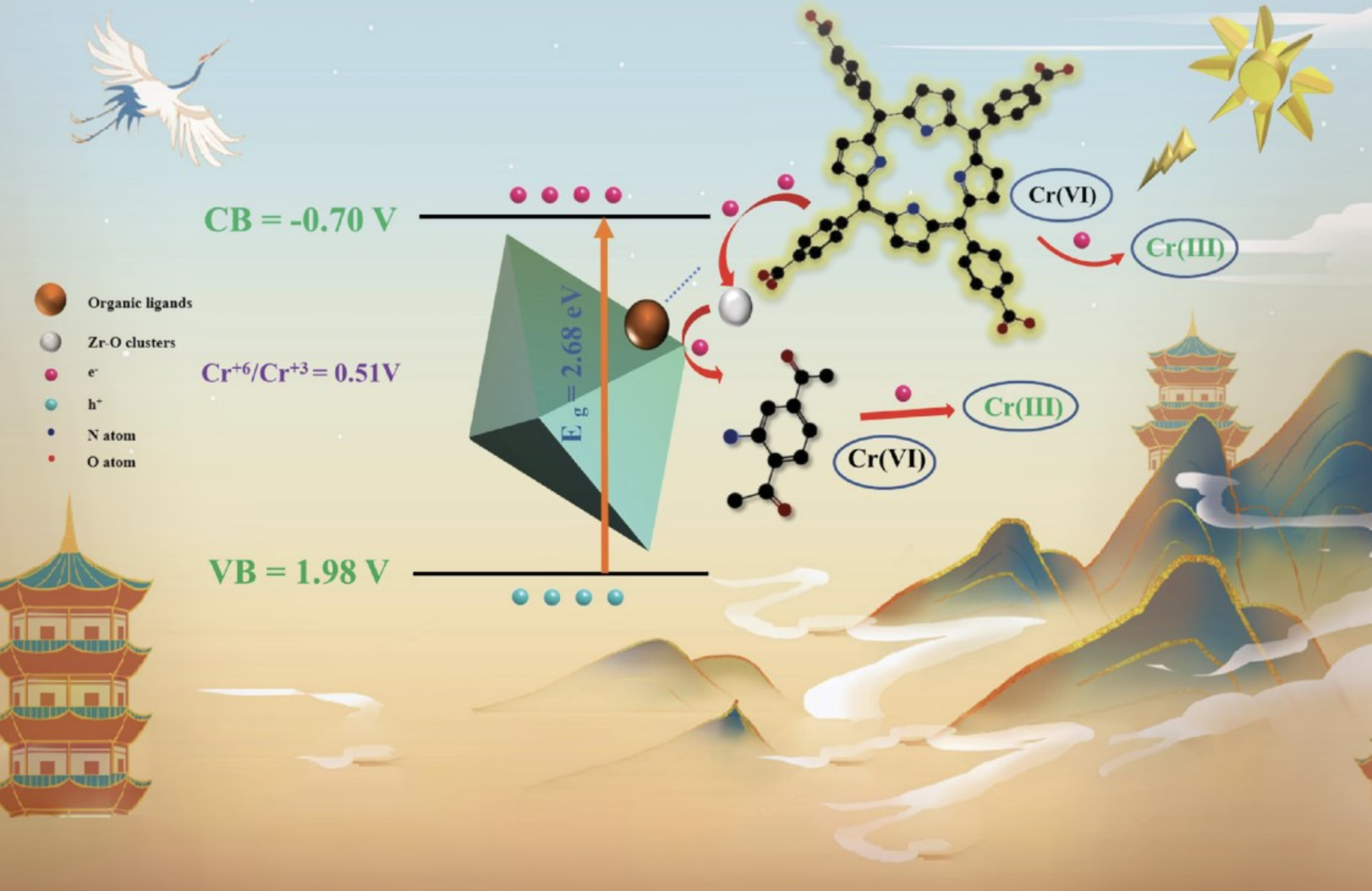


# Porphyrin Modified UiO-66-$NH_2$ for Photoreduction of Cr(VI) under Visible Light

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