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## Abstract

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Nanostructures of Cu-doped ZnO (Cu:ZnO) were prepared with chemical precipitation technique. Phase constitution, presence of functional groups, optical properties and surface morphology were evaluated using X-ray diffractometer (XRD), Fourier transform infrared spectroscopy (FTIR), UV-Vis spectrophotometer and High-resolution transmission electron microscope (HR-TEM), respectively. ZnO consisted of hexagonal wurtzite structure and crystallinity of the sample was observed to increase with increasing doping concentration. Addition of Cu to ZnO served to transform nanoclusters into nanorods as revealed during HR-TEM analysis. Photocatalytic activity was enhanced due to the formation of nanorods and UV-Vis absorption spectra showed that methylene blue (MB) was degraded more efficiently with ZnO nanostructures up to 4% Cu doping. In addition, doped nanostructures showed enhanced bacterial efficiency for G +ve.