

# Investigation on the Effect of Ultrasonication on the Morphology of BiVO<sub>4</sub> Sonicated During and After Preparation by Chemical Co-Precipitation Method

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## Abstract

Bismuth vanadate (BiVO<sub>4</sub>) was synthesized by chemical co-precipitation and ultrasonic assisted co-precipitation method. The crystal structure of the samples was studied using X-Ray diffraction (XRD). The monoclinic scheelite structure was confirmed from the presence of (1 2 1) and (0 4 0) planes. The morphology and optical properties of the samples were analysed using scanning electron microscope (SEM) and UV-Vis diffused reflectance spectroscopy (DRS) respectively. Photocatalytic activity of the prepared BiVO<sub>4</sub> was tested for the photo-degradation of Methylene Blue under visible light irradiation. The properties of as prepared BiVO<sub>4</sub> is compared with the samples prepared using ultrasonic assisted co-precipitation method during and after preparation, and an optimal ultrasonic power output which leads to better photocatalytic activity is identified. The sample sonicated with 160 W during preparation yielded better catalytic efficiency which showed 93% degradation of Methylene blue. The improved catalytic activity could be attributed to its crystallinity, unique morphology and higher surface area compared to other samples.

**Keywords:** BiVO<sub>4</sub>, chemical precipitation, photocatalysis