SUPPLEMENTARY INFORMATION

Zinc hydroxide/oxide and Zinc Hydroxy Stannate photocatalysts as potential scaffold for environmental remediation

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To examine the chemical compositions and purity, the as-synthesized zinc based hydroxide/oxide nanostructures were further characterized by FTIR analysis. Figure S1 exhibits the typical FTIR spectra of as-synthesized zinc based hydroxide/oxide nanostructures (Zn-1, Zn-2 and Zn-3). All three samples exhibited well-defined absorption peaks. As can be seen in the spectra that all samples are exhibiting a broad band in the range of 3600 – 2700 cm^{-1}, related with the adsorbed water and hydroxide ions. Interestingly, with increasing the reaction time and temperature, the intensity of this band was decreased due to the reduction of OH^{-} ions in the prepared samples. In addition to this, all the samples also show a sharp and strong band in the range of 555-480 cm^{-1} which are related with the metal-oxygen (Zn-O) bond. The observed FTIR peaks are similar to the reported literature [27]. The peaks in the range of 1500 – 1000 cm^{-1} can be assigned to C-N stretching and can be related to synthesis residues of ethylenediammine. The peaks intensities decrease with the increase in temperature and reaction time reaction, indicating the re-motion of residues in Zn-3 sample when compared with Zn-1 and Zn-2.

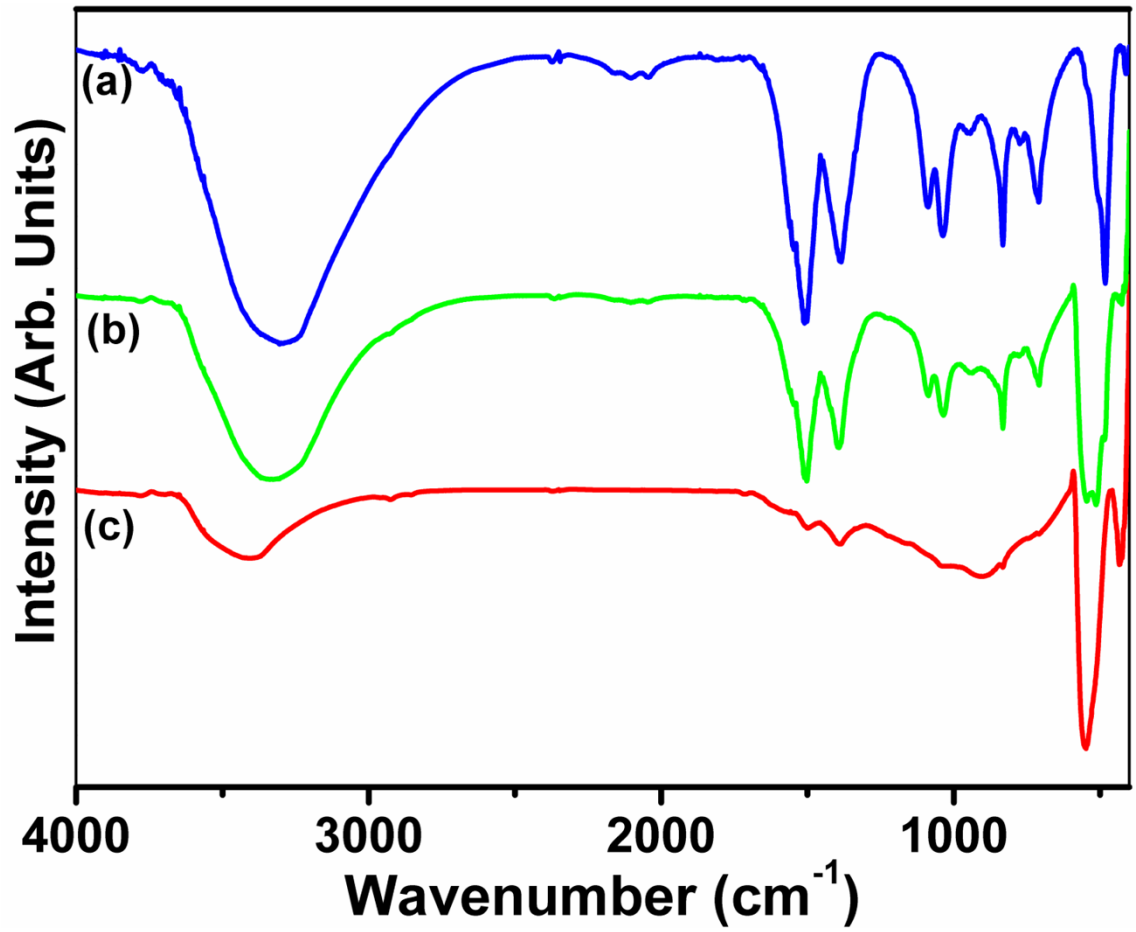

Figure SI1: Typical FTIR spectra of as-synthesized zinc based hydroxide/oxide samples, (a) Zn-1; (b) Zn-2; and (c) Zn-3.

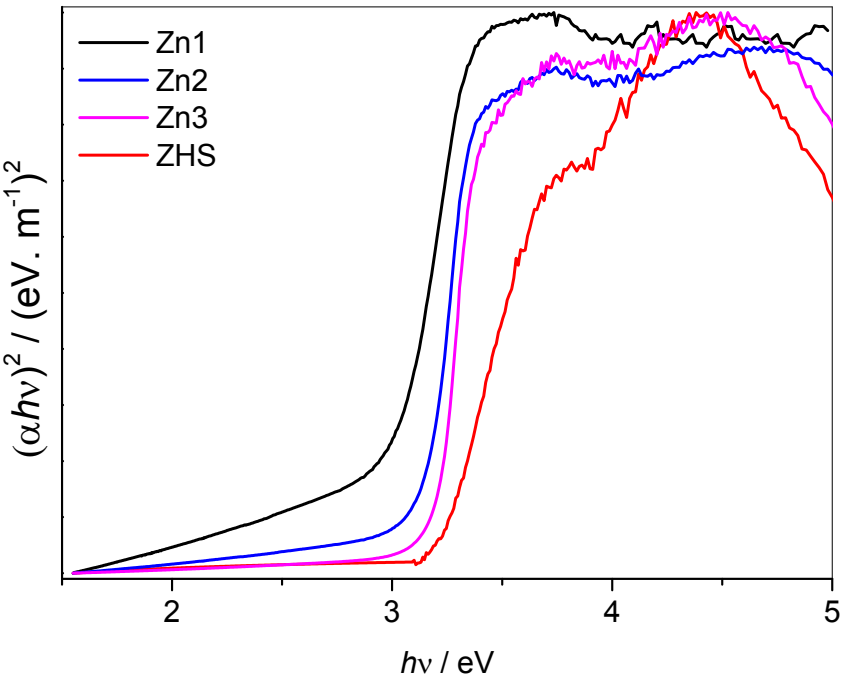

Figure SI2: Plot of $(\alpha h\nu)^2$ as a function of $h\nu$ from the UV-Vis diffuse reflectance curve of as-synthesized samples.