



## A Facile, One-Pot and Eco-Friendly Synthesis of $V_2O_5$ Nanoparticle for Enhanced Catalytic Reduction of Celestine Blue

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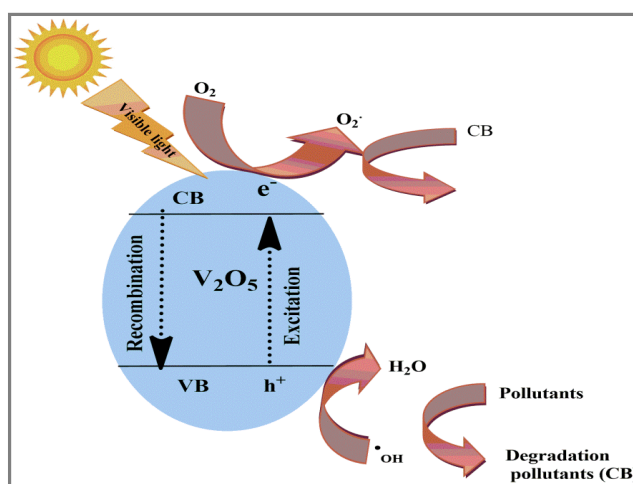
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Accepted on 20<sup>th</sup> January, 2019

### ABSTRACT

A one-pot synthesis of  $V_2O_5$  nanoparticle using Image result for eucalyptus tree Eucalyptus leaf extracts (G- $V_2O_5$ ) as a reducing and stabilizing agent is reported herein. The G-  $V_2O_5$  was synthesized by the co-precipitation method and characterized by X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FT-IR), Field emission scanning electron microscopy (FE-SEM), elemental analysis (EDX) and photocatalytic degradation. The prepared nanoparticles were tetragonal and monoclinic in structure and confirmed by the XRD patterns. The photocatalytic activity of the mixture of 2% G-  $V_2O_5$ , 3% G-  $V_2O_5$  and 5% G-  $V_2O_5$  were studied in Celestine Blue degradation reaction. 3% G- $V_2O_5$  showed the highest photocatalytic activity among the mixtures. The dye Celestine Blue (CB) showed 89 percentage of degradation obtained in 180 min with the mixture of G- $V_2O_5$ .

### Graphical Abstract



**Keywords:** Celestine Blue, G- $V_2O_5$ , Photocatalytic activity, Degradation.