

**SYNTHESIS AND CHARACTERIZATION ZINC OXIDE DOPED
GRAPHENE NANOHYBRID BY SOL-GEL METHOD**

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ABSTRACT

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A series of pure ZnO and graphene doped ZnO nanohybrid samples were synthesized via ultrasonic assisted sol-gel method using reducing agent Hexamethylenetetramine (HMTA) at different weight percentage. The prepared sample were characterized by XRD, FTIR and UV-Visible to study the structural, functional and optical properties. XRD analysis reveals that as pure ZnO, all the diffractive peaks can be indexed as the hexagonal ZnO, while for ZnO/Graphene nanohybrids shows a diffraction peaks at $2\theta_{(002)} = 26.42$ indicating the graphene has been successfully doped. The estimated crystallite size was decreased as increased the Graphene weight % in the range of 32.94 – 40.32 nm. In UV-Vis spectra, two absorption band were observe that can be assigned to absorption of ZnO crystal with correspond absorption edge at 375 nm and the peak at about 302 nm is describe to graphene absorption. The FTIR analysis demonstrate that the functional group present in the obtained product. The ZnO/Graphene nanohybrid may be ideal candidates for photocatalyst application.

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