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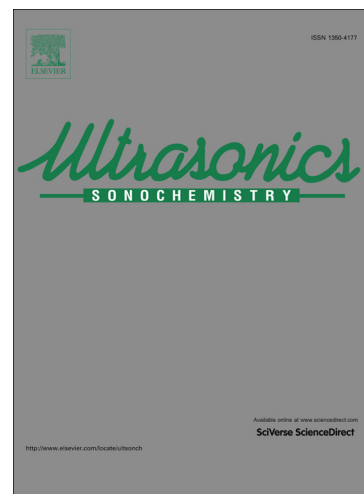
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**ULTRASOND ASSISTED SYNTHESIS OF GALLIUM HYBRIDS FOR
ENVIRONMENTAL REMEDIATION APPLICATION**

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Abstract

Micron-sized, rhombohedral shaped gallium hybrids with different indole derivatives (indole, 2-methyl-indole, indole-2-carboxylic acid) were successfully synthesized with precipitation method coupled with ultrasound followed by the post-grafting method. The as-synthesized hybrid materials were characterized using FTIR, SEM, XPS, XRD, and BET techniques. FTIR spectra showed characteristic absorption bands of gallium oxide and gallium hybrids at 400-700 cm^{-1} and 1400-1600 cm^{-1} . SEM, XRD, and BET showed that ultrasound-assisted gallium micro-particles are porous, crystalline possessing high surface to volume ratio as compared to that synthesized in the absence of ultrasound. Survey scan of XPS revealed the presence of gallium, oxygen, nitrogen, and carbon. The as-synthesized gallium hybrids were applied as a potential photocatalyst towards Reactive Blue 4 (model pollutant) using batch adsorption experiment under visible light. It showed maximum 30-65% degradation within two hours and followed a pseudo-first-order kinetic model with $R^2 > 0.9$.

Keywords: Gallium; indole; 2-methyl indole; indole-2-carboxylic acid; Photodegradation;

Reactive Blue 4

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