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## Neem (Azadirachta indica) gum assisted sol-gel synthesis and characterization of ZnO nanoparticles for photocatalytic application(Article)

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### Abstract

Neem (Azadirachta indica) gum-assisted sol-gel process was newly explored for the synthesis of ZnO nanoparticles. Neem gum plays a vital role as an effective chelating agent for Zn<sup>2+</sup> ions, which enables the uniform distribution of metal ions throughout the gum matrix, which was identified by FTIR and SEM-EDX analysis. Thermal decomposition of the dried gel results in the formation of ultrafine ZnO nanoparticles as low as 450 °C. FTIR and XRD analyses confirm the formation of phase pure ZnO nanoparticles without any organic residues. TEM investigation identified the formation of poly-dispersed ZnO nanoparticles with the size range between 30 and 110 nm. Its optical activity was analyzed employing UV-Vis and PL studies. The synthesized ZnO nanoparticles showed excellent photocatalytic performance in degrading trypan blue organic dye under the exposure of UV radiation and ~ 97% of the trypan blue was degraded in 180 min. © 2018, Australian Ceramic Society.

### Author keywords

[Azadirachta indica gum](#) [Combustion synthesis](#) [Photo catalysis](#) [ZnO nanoparticles](#)

### Indexed keywords

Engineering controlled terms:

[Chelation](#) [Combustion synthesis](#) [Decomposition](#) [II-VI semiconductors](#) [Metal ions](#)  
[Metal nanoparticles](#) [Metals](#) [Sols](#) [Synthesis \(chemical\)](#) [Zinc oxide](#)

Engineering uncontrolled terms

[Azadirachta indica](#) [Chelating agent](#) [Optical activity](#) [Organic residues](#)  
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### Cited by 12 documents

Bhattacharjee, N. , Som, I. , Saha, R.

A critical review on novel eco-friendly green approach to synthesize zinc oxide nanoparticles for photocatalytic degradation of water pollutants

(2024) *International Journal of Environmental Analytical Chemistry*

Lins, A. , Jerônimo, A.G. , Barbosa, R.

Facile Synthesis of Ni-Doped ZnO Nanoparticles Using Cashew Gum: Investigation of the Structural, Optical, and Photocatalytic Properties

(2023) *Molecules*

Kanimozhi, S. , Hariram, M. , Ganesan, V.

Exploring Azadirachta indica Gum as the Sustainable Fuel in Combustion Process for the Synthesis of ZnO Nanoparticles with Antimicrobial and Antioxidant Potentials

(2023) *Nano LIFE*

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