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





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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 $Zn^{2+}$ 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 | Photocatalytic application | Photocatalytic performance | SEM-EDX analysis | Uniform distribution

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