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Biogenic silver nanoparticles and their prodigious potential towards the catalytic reduction of 4-nitrophenol into 4-aminophenol

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Nowadays there is an indispensable demand to build up cheap, sustainable, and eco-friendly strategies for synthesis of metallic nanoparticles, because conventional approaches are associated with many shortcomings like expensive and noxious chemicals, complex process and malignant products. Moreover, the development of benign and efficient means for alleviations of industrial grade baleful organic dyes from the fresh water resources is a formidable challenge. To this end, current study was emphasis on the catalytic reduction of 4-nitrophenol (4-NP) to 4-aminphenol (4-AP) by using green synthesized silver nanoparticles (Ag NP's) prepared from Syzygium cumini (jamun) leaves extract. As synthesized nanoparticles were characterized by pertinent spectroscopy and microscopy tools, which confirms the formation of spherical and small sized Ag NP's with size range of 25-40 nm. The synthesized biogenic Ag NP's shows the prodigious potential towards the complete reduction of the 4-NP into 4-AP within 30 minutes, thus confirming the efficacy of Ag NP's as an efficient green catalyst. These catalytic proficiencies firmly balm the applications of Ag NP's in the purification of polluted water. Thus, current work provides the new insights in the development of green catalyst and their implication towards the abatement of noxious industrial effluents from water very effectively.

Biography

Jagpreet Singh is currently working as an Assistant Professor in the Department of Nanotechnology at Sri Guru Granth Sahib World University, Fatehgarh Sahib, Punjab, India. He has completed his Master's in Nanotechnology with specialization in the chemo-bio synthesis of metal and metal oxide nanoparticles and its applications for environmental remediation. His research areas focus on chemical and biogenic synthesis of metallic nanoparticles, and their applications towards environmental remediations. He is serving as an Editorial Member and Reviewer of many international peer reviewed journals. He has published more than 15 research papers in peer reviewed journals and one book in his academic carrier.

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