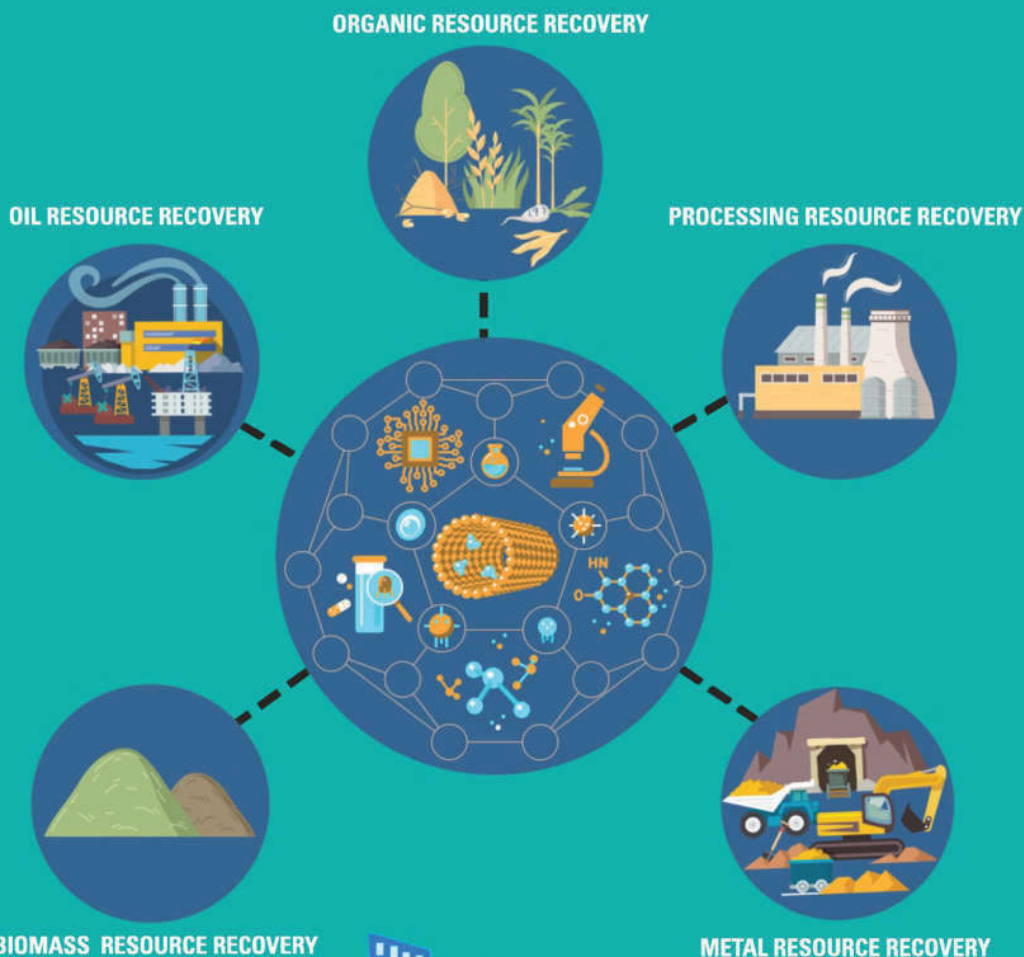


Application of Nanotechnology for Resource Recovery from Wastewater



Jitendra Kumar Pandey • Syed M. Tauseef
Suvendu Manna • Ravi Kumar Patel
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Photocatalytic wastewater remediation using nanoparticles: Present challenges and future outlook

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Abstract

Increasing water pollution and scarcity of clean drinking water is a growing concern around the world. Huge amount of chemicals such as dyes, chlorophenols, pesticides are dumped into the water bodies through diverse means that pose a serious threat to both terrestrial and aquatic life. Several conventional techniques such as coagulation, disinfection, sludge drying, fluoridation and pH correction have been used to treat contaminated water. Most of the methods used so far face some limitations of high cost, incomplete disinfection, formation of secondary pollutants etc. Nanotechnology is the innovative technology to detect the finest contaminants from water sources and provide best solutions to mitigate these pollutants in the environment. Photocatalytic remediation using nanocatalysts is one such solution and can be considered as safe and sustainable approach to decontaminate wastewater. Photocatalytic technology offers a great promise and has been demonstrated as an effective, versatile and green technique for environmental remediation. Photocatalysis is an advanced oxidation technique that can degrade the pollutants by generating highly reactive species on exposure to UV light, ozone or hydrogen peroxide. In this chapter, we highlighted the current perspective of photocatalysis as an environment sustainable technique and have explained the futuristic scenario for addressing the global water crisis.