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Applications of nanocarbon-based aerogels in purifying industrial wastewater

Ambreen, Subia^a; Dhivylakshmi A.^b; Shuruti B.^b; Dhivya T.^b; Danish, Mohammad^b

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^a Rajkiya Engineering College, Uttar Pradesh, Bijnore, India

^b Department of Chemistry, Periyar Maniammai Institute of Science and Technology, Tamil Nadu, Thanjavur, Vallam, 413603, India

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Abstract

There is a global scarcity of clean water due to increased demand of water. One cannot just depend on the surface water bodies alone. A large amount of water is discharged as waste from the industries which are harmful and cannot be utilized. In this scenario the recycling and reusing of water is considered to be a vital solution in both social and environmental concern. Treated wastewater is one of the promising solutions. The wastewater is always a reliable and consistent source; it is readily accessible as well. This worked as a driving force to attract new substrates and new technologies for wastewater treatment. There are several techniques for the industrial wastewater treatment, some of which are capable of removing heavy metals and other contaminants released from various industries although they are not that much efficient. Among various methods, sorption is accepted as simple and proficient technique for more or less all main water pollutants together with heavy metal ions and dyes. This method involves adsorption and absorption processes. In this context, nanocarbon-based aerogels emerge as promising materials because of their incredibly high surface areas and high porosity along with hydrophobicity, low cost and scalable synthesis, controllable morphology, facile processing, low density, and biocompatibility. Adsorption depends on nature of accessible surface area of aerogels and absorption is governed by pore size/volume of the sorbent. © 2021 Elsevier Inc.

Author keywords

Adsorption; Aerogels; Graphine; Graphine oxide; Industrial wastewater treatment; Nanocarbons

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