

Accepted Manuscript

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PII: S0167-7322(17)31761-0
DOI: doi: [10.1016/j.molliq.2017.06.115](https://doi.org/10.1016/j.molliq.2017.06.115)
Reference: MOLLIQ 7561

To appear in: *Journal of Molecular Liquids*

Received date: 24 April 2017
Revised date: 15 June 2017
Accepted date: 25 June 2017

Please cite this article as: Sadanand Pandey , A comprehensive review on recent developments in bentonite-based materials used as adsorbents for wastewater treatment, *Journal of Molecular Liquids* (2017), doi: [10.1016/j.molliq.2017.06.115](https://doi.org/10.1016/j.molliq.2017.06.115)

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A comprehensive review on recent developments in bentonite-based materials used as adsorbents for wastewater treatment

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Abstract

The chemical contamination of water from an extensive variety of toxic derivatives, specifically heavy metals, aromatic molecules and dyes, is a genuine ecological issue attributable to their potential human lethality. In this way, there is an earnest need to create advances that can remove harmful toxins found in wastewaters. Among all the reported treatment techniques, adsorption is one of the more prevalent systems for the removal of contaminations from the water. Adsorption is a standout amongst the most simple and effective strategy for treating industrial effluents, and a valuable device for ensuring nature. The increasing number of publications on adsorption of toxic compounds by modified bentonites demonstrates that there is a recent increasing interest in the synthesis of new low-cost adsorbents used in water treatment. The present review demonstrates the late advancements of nanotechnology in the synthesis of nanoadsorbents containing bentonite and its composites. The primary target of this review is to depict the adaptable way of bentonite and its composite and their capacity to absorb variety of inorganic contaminants, which are available in the water. It is evident from the review that modified bentonite composites (low-cost adsorbents) have demonstrated high removal capabilities for certain inorganic contaminants from water.

Keywords: Bentonite composite; Nanotechnology; Adsorption; Heavy metals; Inorganic contaminants.

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