

Experimental Modeling and Evacuation of Cr(VI) from Wastewater by Using Nanostructured Ceria

Advances in Civil Engineering and Infrastructural Development pp 419–426 | Cite as

- Harshada Deore (1)
- Mamta Sardare (1) Email author (mdsardare@mitaoe.ac.in)
- Parag Nemade (2)

1. School of Chemical Engineering, MIT Academy of Engineering, , Alandi, Pune, India

2. Department of Chemical Engineering, Institute of Chemical Technology, , Matunga, India

Conference paper

First Online: 14 November 2020

- 222 Downloads

Part of the [Lecture Notes in Civil Engineering](#) book series (LNCE, volume 87)

Abstract

Ceria nanoparticle synthesizes by nanotechnology by using cerium chloride and sulfuric acid by the precipitations method which is evaluated as an adsorbent for the evacuation of Cr(VI) detachment from wastewater. Experimentation was done using the simple batch process where all the experiments were conducted to verify the efficiency of the nanoparticle for the removal of Cr(VI). Adsorption achieved balance inside at some point and was autonomous of starting chromium (VI) focus. The hybrid material was found to have maximum efficiency for the removal of hexavalent chromium with 94–95.6%, pH at 7, adsorbent dose of 0.1 mg and temperature of 28 ± 2 °C and initial concentration of 50 ppm. The mathematical modeling has done for the experimental data. The experimental data clearly fitted the Langmuir isotherm and Freundlich adsorption isotherm; the adsorption information was examined; and the adsorption instrument was explored utilizing X-beam diffraction by SEM.

Keywords

Modeling Evacuation Ceria Cr(VI) Adsorption isotherm

This is a preview of subscription content, [log in](#) to check access.