

Web of Science

Search

Search Results

My Tools ▾

Search History

Marked List

Full Text from Publisher

 Look Up Full Text


Save to EndNote online

Add to Marked List

305 of 723

Synthesis and environmental applications of cellulose/ZrO₂ nanohybrid as a selective adsorbent for nickel ion

By: Khan, SB (Khan, Sher Bahadar)^[1,2]; Alamry, KA (Alamry, Khalid A.)^[2]; Marwani, HM (Marwani, Hadi M.)^[1,2]; Asiri, AM (Asiri, Abdullah M.)^[1,2]; Rahman, MM (Rahman, Mohammed M.)^[1,2]

[View ResearcherID and ORCID](#)

COMPOSITES PART B-ENGINEERING

Volume: 50 Pages: 253-258

DOI: 10.1016/j.compositesb.2013.02.009

Published: JUL 2013

[View Journal Impact](#)

Abstract

Cellulose/ZrO₂ nanohybrid has been synthesized by simple growth of ZrO₂ on cellulose matrix and characterized by X-ray diffraction (XRD), field emission scanning electron microscopy (FESEM), Fourier transforms infrared spectroscopy (FTIR) and X-ray photoelectron spectroscopy (XPS). Interestingly, FESEM showed nanoparticles with an average size of 50 nm. The analytical potential of the newly prepared nanohybrid was studied for a selective extraction of nickel prior to its determination by inductively coupled plasma-optical emission spectrometry. The selectivity of nanohybrid was investigated toward eight metal ions, including Cd²⁺, Co²⁺, Cr³⁺, Cu²⁺, Fe³⁺, Ni²⁺, Zn²⁺ and Zr⁴⁺. Data obtained from the selectivity study showed that nanohybrid was the most selective toward Ni²⁺. The uptake capacity for Ni²⁺ was experimentally calculated and found to be 79 mg g⁻¹. Moreover, adsorption isotherm data of Ni²⁺ on nanohybrid was well fit with the Langmuir adsorption isotherm, strongly supporting that the adsorption process was mainly monolayer on homogeneous adsorbent surfaces. Finally, data of Ni²⁺ adsorption on nanohybrid as a function of contact time displayed that equilibrium kinetics are very fast. (C) 2013 Elsevier Ltd. All rights reserved.

Keywords

Author Keywords: Nano-structures; Polymer matrix composites; Electron microscopy; Surface treatments; Cellulose

KeyWords Plus: CHEMICAL SENSOR APPLICATIONS; WATER SORPTION PROPERTIES; SOLID-PHASE ADSORBENT; PHOTO-CATALYST; TRIVALENT CHROMIUM; COMPOSITE FILMS; ICP-OES; ADSORPTION; SILICA; NANOSTRUCTURE

Author Information

Reprint Address: Khan, SB (reprint author)

King Abdulaziz Univ, CEAMR, POB 80203, Jeddah 21589, Saudi Arabia.

Addresses:

[1] King Abdulaziz Univ, CEAMR, Jeddah 21589, Saudi Arabia

[2] King Abdulaziz Univ, Fac Sci, Dept Chem, Jeddah 21589, Saudi Arabia
Organization-Enhanced Name(s)
 King Abdulaziz University

E-mail Addresses: sbkhan@kau.edu.sa

Publisher

Citation Network

20 Times Cited

36 Cited References

[View Related Records](#)



Create Citation Alert

(data from Web of Science Core Collection)

All Times Cited Counts

20 in All Databases

20 in Web of Science Core Collection

2 in BIOSIS Citation Index

0 in Chinese Science Citation Database

0 in Data Citation Index

0 in Russian Science Citation Index

0 in SciELO Citation Index

Usage Count

Last 180 Days: 2

Since 2013: 33

[Learn more](#)

Most Recent Citation

Khan, Shahid Ali. Zirconia-based catalyst for the one-pot synthesis of coumarin through Pechmann reaction . NANOSCALE RESEARCH LETTERS, JUL 26 2016.

[View All](#)

This record is from:

Web of Science Core Collection
 - Science Citation Index Expanded

Suggest a correction

If you would like to improve the quality of the data in this record, please [suggest a correction](#).

ELSEVIER SCI LTD, THE BOULEVARD, LANGFORD LANE, KIDLINGTON, OXFORD OX5 1GB,
OXON, ENGLAND

Categories / Classification

Research Areas: Engineering; Materials Science

Web of Science Categories: Engineering, Multidisciplinary; Materials Science, Composites

Document Information

Document Type: Article

Language: English

Accession Number: WOS:000320631000031

ISSN: 1359-8368

Journal Information

Table of Contents: [Current Contents Connect](#)

Impact Factor: [Journal Citation Reports](#)

Other Information

IDS Number: 167KN

Cited References in Web of Science Core Collection: **36**

Times Cited in Web of Science Core Collection: **20**