









▶ International Journal of Polymeric Materials and Polymeric Biomaterials ▶ List of Issues ▶ Volume 60, Issue 12

Chitosan Aerogels Exhibiting High Surfac

International Journal of Polymeric Materials and Polymeric Biomaterials >

Volume 60, 2011 - Issue 12

999 75 Views CrossRef citations to date Altmetric

Original Articles

Chitosan Aerogels Exhibiting High Surface Area for Biomedical Application: Preparation, Characterization, and Antibacterial Study

Kumari Rinki, Pradip K. Dutta , Andrew J. Hunt, Duncan J. Macquarrie & James H. Clark Pages 988-999 | Received 08 Sep 2010, Accepted 08 Jan 2011, Published online: 08 Sep 2011

66 Cite this article https://doi.org/10.1080/00914037.2011.553849



Reprints & Permissions

Read this article



Metrics

Abstract

Full Article

The objective of the present work is to improve the surface area of aerogel via supercritical carbon dioxide (sc \cdot CO₂) treatment and thus to obtain the chitosan derivative. The resulting mesoporous material exhibits the typical characteristics of aerogels such as high porosity and high surface area. The aerogels were characterized using FTIR, SEM, TEM, and thermal analysis. The specific surface areas and porosities of aerogels were determined using N₂ adsorption. The antibacterial assays were done using E. coli. The prepared chitosan aerogels show important properties such as biocompatibility, non-toxicity, and antibacterial activity, making them suitable for biomedical applications.

Keywords:

aerogels chitosan sc · CO₂

Acknowledgments

The authors thank Commonwealth Scholarship Commission-London for providing an Academic Staff Fellowship Award-2007 to PKD and KR is thankful to Director, MNNIT, Allahabad, for providing her institute fellowship. KR also acknowledges Ms. Richa Bhargava, Department of Physics, MNNIT, Allahabad, for her help in carrying out the antibacterial activity. We also express our gratefulness to Dr. Kotu, Sr. Scientist of BRI, Nagda, for the chemical analysis of the chitosan sample, and UGC, New Delhi for the research grant.

Related Research Data

A kinetic study on the thermal degradation of N,N,N-trimethylchitosan

Source: Polymer Degradation and Stability Chemistry of Aerogels and Their Applications

Source: ChemInform

Stimulatory effect on bone formation exerted by a modified chitosan

Source: Biomaterials

Porous chitosan scaffolds for tissue engineering

Source: Biomaterials

Synthesis of silica aerogel blanket by ambient drying method using water glass based precursor and glass wool modified by alumina sol

Source: Journal of Non-Crystalline Solids

Accessibility of the Functional Groups of Chitosan Aerogel Probed by FT-IR-Monitored

Deuteration

Source: Biomacromolecules

Investigation of ionic conductivity of composite gel polymer electrolyte membranes

Information for

Authors

R&D professionals

Editors

Librarians

Societies

Opportunities

Reprints and e-prints

Advertising solutions

Accelerated publication

Corporate access solutions

Open access

Overview

Open journals

Open Select

Dove Medical Press

F1000Research

Help and information

Help and contact

Newsroom

All journals

Books

Keep up to date

Register to receive personalised research and resources by email



Sign me up











Accessibility



Copyright © 2025 Informa UK Limited Privacy policy Cookies Terms & conditions

☑Taylor and Francis Group

Registered in England & Wales No. 01072954 5 Howick Place | London | SW1P 1WG