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

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Pages 988-999 | Received 08 Sep 2010, Accepted 08 Jan 2011, Published online: 08 Sep 2011

🗨️ Cite this article 🔗 <https://doi.org/10.1080/00914037.2011.553849>

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Abstract

The objective of the present work is to improve the surface area of aerogel via supercritical carbon dioxide (sc · 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.

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