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

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Abstract

The objective of the present work is to improve the surface area of aerogel via supercritical carbon dioxide (sc · CO_2) 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 N_2 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 · CO_2

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