

POLYUREA-CROSSLINKED ALGINATE AEROGELS WITH ANTIBACTERIAL PROPERTIES

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Alginate aerogels are among the most well-studied biopolymer-based aerogels. Their preparation is simple, inexpensive and environmentally friendly, and they can incorporate several metal cations. Therefore, they have found several applications, including a wide range of biomedical applications. The main disadvantage of alginate aerogels is that they are mechanically weak. This has been rectified recently, by applying the X-aerogel technology, initially developed for silica and other inorganic aerogels, in order to prepare polyurea-crosslinked alginate (X-alginate) aerogels [1-3], via reaction of a preformed alginate network with a triisocyanate that was introduced, post-gelation, to the pores of the wet gel *via* diffusion. Crosslinking with polyurea has proven to be an efficient way to increase the mechanical stability and hydrophobicity of alginate aerogels, improving therefore their application potential. For example, X-Ca-alginate aerogels (Ca-alginate crosslinked with polyurea derived from aliphatic triisocyanate Desmodur N3300) have been found suitable for implants in tissues [4]. In the present study, the potential antibacterial activity of X-M-alginate (M: Cu, Ag, Zn) aerogels has been studied against pathogenic microorganisms, such as *Staphylococcus aureus*.

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