# Polylactide-crosslinked alginate aerogels

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Biopolymer aerogels are attractive materials because they: (a) come from natural resources; (b) are synthesized in water; (c) bear a large number of functional groups available for coordination to metal ions; (d) are biocompatible, biodegradable and non-toxic; and, (e) can be converted pyrolytically to carbon aerogels with ultra-high open porosities and surface areas.[1] The main drawback of all biopolymer aerogels, however, is that they are mechanically-weak materials. To resolve this issue, dangling –OH groups have been employed as a chemical template for the formation of a nano-thin conformal polyurethane/polyurea coating over the entire skeletal framework.[2,3] This methodology, known as polymer-crosslinking,[4] yields aerogels that can be as stiff as main-stream organic aerogels with two- or three-times higher densities.

In this work, we extend the crosslinking method to the synthesis of polylactide-crosslinked alginate aerogels, along with the characterization of their chemical structure and porous network. In this case, the alginate –OH groups act as initiators for Ring Opening Polymerization (ROP) of *D,L*-lactide.

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