

# Cross-linking and modification of sodium alginate biopolymer for dye removal in aqueous solution

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## Description

In this study, spherical beads have been prepared by ionotropic gelation of sodium alginate using two types of cross-linking, physical cross-linking in the presence of  $\text{Ca}^{2+}$  ions and chemical cross-linking which was made with epichlorohydrin for environmental applications. The different beads of alginate were characterized by Fourier transform infrared spectroscopy, optical microscopy, scanning electron microscopy, and X-ray diffractometry to provide evidence of successful cross-linking. The physicochemical properties of the beads such as the average diameter, water content, the zero charge point, and the density were also determined. The efficiency of the beads as biosorbent for the removal of dyes is assessed using methyl violet (MV) as a model molecule. A comparative adsorption performance of wet calcium alginate beads (WCaAB), dry calcium alginate beads (DCaAB), wet epichlorohydrin cross ...