Hydrogel Formulation for Industrial Effluent Treatment

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The generation of industrial effluents with a content of contaminants harmful to the environment has been increasing in recent decades due to the growth of industrial activities in different branches. For the proper disposal of industrial effluents or even the reuse of part of its components, specifically water, it is necessary that the contaminants present are removed. For this purpose, the application of hydrogels is advantageous due to the adsorption capacity of water, heavy metals and other particles. The work proposal is to develop hydrogels from sodium alginate for the treatment of effluents with a view to reusing water for new industrial processes. The synthesis of the hydrogel will be through the cross-linking reaction of sodium alginate. The reaction products will be characterized morphologically through scanning electron microscopy (SEM). The reaction products will be evaluated by Fourier Transform Infrared spectroscopy (FTIR) and differential scanning calorimetry (DSC) in order to verify the occurrence of crosslinking reactions. Water swelling tests will be carried out to investigate the adsorption capacity of the reaction products. It is estimated to obtain an efficient product for application in industrial effluent treatment for water reuse in new processes