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Participation

Preparation of chitosan beads and membranes for industrial applications

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Industrial waste water contains a variety of toxic chemicals including toxic heavy metals that must be removed before discharging to the environment. A number of methods have been investigated to remove these heavy metals. The use of chitosan for removal of some of these toxic metals appears to be very promising. Chitosan is a natural product derived from chitin, a polysaccharide found in the exoskeleton of shellfish like shrimp or crabs. The term Chitosan does not refer to a uniquely defined compound; it merely refers to a family of copolymers with various fractions of acetylated units. Chitosan in its natural form is not suitable for industrial application. In this study, chitosan was modified and prepared as beads so that it can be easily used for various applications. Chitosan Beads were prepared under various conditions. Commercially available chitosan flakes were dissolved in either acetic acid or oxalic acid and a homogeneous mixture was prepared. The spherical beads were obtained by drop wise addition of the acidic mixture into a NaOH bath. The beads were washed with distilled water until the pH was neutral or 7. Beads were then dried either in a vacuum oven or by freeze drying. These beads can be used to remove metals and other contaminants from the ground and waste waters. Attempts were also made to prepare chitosan membrane that can have application in Fuel Cells. The beads were characterized by scanning electron microscope and were also evaluated for chromium (III) adsorption.