

Preparation and characterization of methylcellulose/alginate semi-IPN hydrogel for wastewater treatment

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Hydrogels have been recognized as a versatile platform for contaminant adsorption owing to the extreme water content, rapid ion diffusion, and the ability to integrate diverse functional receptors. In this study, we prepared benign, semi IPN alginate/methylcellulose hydrogel with temperature aided molding followed by amine functionalization. Different proportions and shapes were prepared to study hydrogel properties and adsorption efficiency. High density adsorption sites created by polyelectrolytic nature of the biopolymers chain coupled with amine modification yielded high adsorption capacity. Internal structure and functionalities were studied with SEM and FTIR, respectively. Adsorption capacity was studied, and the mechanism was characterized by adsorption kinetic models.