

PA 20 - Comparisons of Physical Properties and Adsorption Performance of Chitosan Nanoparticles Prepared by New Methods

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Recently chitosan nanoparticles is gotten attention and intensive studies, widely applying to microorganism inhibition, medicine release, enzyme immobilization, and wastewater treatment. In this study, chitosan was prepared from cuttlebone, and chitosan was separated into chitosan nanoparticles with dispersant sodium tripolyphosphate (STP). The contents of STP were adjusted from 0.1 % to 2 % to investigate the equilibrium of solid-liquid phases, STP critical value, and obtain the chitosan nanoparticles under various conditions. The frozen-drying, rapid frozen-drying, emulsion-droplet coalescence, and ionic gelation were utilized for preparing chitosan nanoparticles. Physical properties including bulk density, laser particle size distribution, BET surface area, pore size distribution, and SEM were measured. Adsorption characteristics of chitosan nanoparticles were used to study the isotherm equilibrium and kinetics. Physical properties and adsorption performance of chitosan nanoparticles prepared by various methods were compared to infer various nanoparticles structures and provide various application references of chitosan nanoparticles.