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Radiation synthesis of chitosan beads grafted with acrylic acid for metal ions sorption

(2011) Radiation Physics and Chemistry 80 (12), 1391-139, 2011

<http://dx.doi.org/10.1016/j.radphyschem.2011.06.013>

ABSTRACT:

Radiation-induced grafting of acrylic acid onto chitosan beads was performed in solution at a dose rate of 20.6. Gy/min of cobalt-60 gamma rays. The effect of absorbed dose on grafting yield was investigated. The characterization of the grafted material was performed by FTIR spectroscopy and the swelling measurements at different pHs. The grafting yield increased with the increase in dose, it reached 80% at 40. kGy irradiation dose. The removal of Pb and Cd ions from aqueous solutions was investigated with both ungrafted and grafted chitosan beads. The sorption behavior of the sorbents was examined through pH, kinetics and equilibrium measurements. Grafted chitosan beads presented higher sorption capacity for both metal ions than unmodified chitosan beads.