Synthesis, Characterization of Sulphonylpolystyrene-based Chelating Resins and their Complexes and their Application to the Selective Removal of some Heavy Metal Ions.

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Abstract:
Modified ion exchangers with chelating groups are now aimed to increase the selective properties of the resins towards metal ion extraction and separation via donor atoms as O, N, S, or P [1 - 4]. Amberlite XAD-16 has been functionalized by coupling through -SO₂ - with 4-aminosalicylic acid, ethylenediamine followed by 5-formylsalicylic acid to give the corresponding chelating resins I and II. Their solid complexes with Co²⁺, Ni²⁺, Cu²⁺, Pb²⁺, Cd²⁺ and Hg²⁺ are isolated and characterized utilizing elemental analysis and different spectral techniques. The batch equilibrium method is utilized for the chelating resins for the removal of Co²⁺, Ni²⁺, Cu²⁺, Pb²⁺, Cd²⁺ and Hg²⁺ from aqueous solutions at different pH values and different contact times at room temperature. The selective removal of Hg²⁺ and Cd²⁺ from a mixture of the six metal ions and the metal capacities of the resins were evaluated using AAS and ICP.

References: