

Synthesis of Ni (II) ion-imprinted porous microparticles and its analytical application

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Nickel (II) ion-imprinted porous microparticles were prepared. Two functional monomers, Dimethylglyoxim(DMG) and vinyl pyridine(4-VP), formed a complex with the template Ni ion through ionic interactions. The self-assembled Ni/monomer complex was polymerized in the presence of a dimethylbenzene cross-linker by a suspension method. After the imprinting sites were provided through removal of the template, the microporous particles, of approximate size 200 um, were obtained for batch separation applications. The chemical structure and morphology of the Ni(II)-imprinted microporous particles were analyzed using FTIR, SEM, and BET. The adsorption capacity and adsorption kinetics of the imprinted beads for the template Ni(II) ion were significantly affected by particle size, nickel ion concentration and pH feed solution. The imprinted particles showed high selectivity for the nickel ion over other metal ions such as Cu and Zn.