

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

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Lead (II) ion-imprinted porous microparticles were prepared. Two functional monomers, methacrylic acid and vinyl pyridine, formed a complex with the template lead ion through ionic interactions. The self-assembled lead/monomer complex was polymerized in the presence of an ethylene glycol dimethacrylate cross-linker by a suspension method. After the imprinting sites were provided through removal of the template, the microporous particles, of approximate size 200 μm , were obtained for batch and column separation applications. The chemical structure and morphology of the Pb(II)-imprinted microporous particles were analyzed using FTIR, SEM, and BET. The adsorption capacity and adsorption kinetics of the imprinted beads for the template Pb(II) ion were significantly affected by particle size, lead ion concentration, pH, and flow rate of the feed solution. The imprinted particles showed high selectivity for the lead ion over other metal ions such as Ni and Zn.