Isotherm studies of pyrogallol-imprinted polymers via precipitation polymerization

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Abstrak

Molecularly imprinted polymers (MIPs) have been the most convenient and selected methods in detection and extraction for many types of specific targets in various fields. MIPs were prepared by mixing template molecule with functional monomer in the presence of cross-linker, solvent and initiator. The selectivity of MIPs is strongly influenced by the types of functional monomer, solvent and polymerization process used. Pyrogallol-imprinted polymer (Py-IP) and non-imprinted polymer (NIP) were synthesized via precipitation polymerization using 4-vinylpyridine (4-VP), divinylbenzene (DVB) and azobisisobutyronitrile (AIBN) as functional monomer, cross-linker and initiator, respectively. Pyrogallol (Py) was used as a target molecule. The synthesized polymers were characterized by Fourier Transform Infrared Spectroscopy (FTIR), Scanning Electron Microscopy (SEM), and UV-Visible Spectroscopy (UV-Vis). In this study, adsorption capacity was measured by the dosage effect, contact time and selectivity study. Results showed that maximum adsorption capacity by Py-IP is above 50%. The Selectivity study shows that k? is >1, which indicates that Py-IP has a good selectivity towards pyrogallol. Therefore, it has a good potential to be used as an adsorbent.