Adsorption Isotherms of Caffeine on MIP

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A molecular imprinted polymer (MIP) using caffeine as the template and methacrylic acid (MAA) as the functional monomer was prepared. Acetonitrile was used as the porogen with ethylene glycol dimethacrylate (EGDMA) as the crosslinker and 2, 2'-azobis(isobutyronitrile) (AIBN) as the initiator. By a linear and nonlinear regression analysis, the experimental parameters in the equilibrium isotherms were estimated. Then, the linear and quadratic equations for concentration and sorbents to adsorption amounts were expressed, and the adsorption equilibrium data were also correlated into the Freundlich isotherm model. Comparisons of caffeine adsorption isotherm on C18 particles as well as the molecular imprinted polymer were made. The results showed that the caffeine imprinted polymer showed extraordinarily higher adsorption ability than C18 particles.