عنوان مقاله:

Recognition and Release of Nalidixic Acid Using Uniformly Sized -Imprinted Nanospheres: Methacrylic Acid to Methyl Methacrylate Different Mole Ratios

محل انتشار:

فصلنامه انرژی و محیط زیست ایران, دوره 4, شماره 1 (سال: 1391)

تعداد صفحات اصل مقاله: 8

نویسندگان:

mehdi forouzani - *Department of chemistry, PayamNoor University,Tehran, Iran*

atefeh abouzarzadeh - *Department of chemistry, PayamNoor University,Tehran, Iran Nanotechnology Research Institute,School of Chemical Engineering, Babol University of Technology, Babol, Iran*

nader bahramifar - *Department of chemistry, PayamNoor University,Tehran, Iran*

mohsen jahanshahi - *Nanotechnology Research Institute,School of Chemical Engineering, Babol University of Technology, Babol, Iran*

خلاصه مقاله:

In the presence of imprinting molecules of Nalidixic acid, uniformly sized molecularly imprinted polymers (MIPs) in nanometer range were synthesized. The MIPs were successfully prepared by precipitationpolymerization using methacrylic acid (MAA) and methyl methacrylate (MMA) as functional monomers atdifferent mole ratios. The effect of combination of MAA-to-MMA on the morphology, binding, recognition and release behaviors of the final particles were studied. The produced polymers were characterized by differential scanning calorimetry and their morphology was precisely examined by scanning electron microscopy. Weobtained very uniform imprinted nanospheres with diameter of 120- 180 nm. Among the MIP nanospheres theMIPs using combination of MAA and MMA showed nanospheres with lowest mean diameter (120 nm) and the highest selectivity factor (9.7). The adsorption properties of Nalidixic acid in acetonitrile for imprinted nanospheres were evaluated by equilibrium rebinding experiments. Results from binding experiments provedthat MIPs exhibit specific affinity to Nalidixic acid in contrast to control polymers and this performance wasaffected by pH of loading solution and. Moreover, release experiments showed the controlled release of Nalidixic acid in longtime period. The loaded Nalidixic acid was released from the imprinted nanospheres within the 140 h

کلمات کلیدی:

Molecular imprinting/ Uniformly sized/ Nanospheres/ Functional monomers/ Nalidixic acid Recognition /Controlled release