Nanocomposites and nanomaterials

The use of calixarenne nanofibers as membranes in the removal of heavy metals

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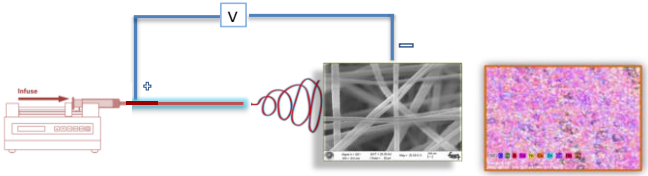
In supramolecular chemistry, macromolecules are widely used for determination and extraction of guest species especially toxic heavy metals due to growing environmental problems caused by industrialization. This has derived the scientist to devise such molecules having either negatively charged, electron deficient or neutral moieties for efficient removal of heavy metals from aqueous media at low level. Therefore, in this feild, calixarenes have gained large attraction due to their excellent properties for extraction of heavy metals. Besides these, in last few years, calixarenes have been used to prepare nanofibers by electrospinning technique to explore their properties at nano level. The electrospinning technique has become simple and versatile mode to generate polymer fibers having very high surface area-to-volume ratio and high porosity with very small pore size. It has been demonstrated that polymeric nanofibers have displayed an excellent performance as a heavy metal adsorbent [1,2].

In this study we report the synthesized two calix[4]arene amide derivatives and preparation of their nanofibers using electrospinning technique. The synthesized nanofibers were used for the extraction of metals from aqueous media. The adsorption of metal ions on calixarenes nanofibers was confirmed through SEM-EDX technique.



1. Ozcan F., *Bayrakci M., Ertul S.//* Synthesis and characterization of novel nanofiber based calixarene and its binding efficiency towards chromium and uranium ions // J Incl Phenom Macrocycl Chem.- 2016.-85.-P.49–58.

2. Ozcan F., *Bayrakci M., Ertul S.*// Synthesis and Preparation of Novel Magnetite Nanoparticles Containing Calix[4]arenes With Different Chelating Group Towards Uranium Anions // Journal of Macromolecular Science.-2015.-Part A **52**.-P. 599–608.