

Amphiphilic p-tert-butylthiacalix[4]arenes containing quaternary ammonium groups: From small molecules toward water-soluble nanoscale associates

Andreyko E., Padnya P., Stoikov I.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

Copyright © 2015 John Wiley & Sons, Ltd. Copyright © 2015 John Wiley & Sons, Ltd. The formation of supramolecular associates based on water-soluble p-tert-butylthiacalix[4]arenes with amino acids has been studied. It was shown that amphiphilic p-tert-butylthiacalix[4]arenes preferably formed supramolecular associates with aromatic α -amino acids (tyrosine and tryptophan). Increasing size of the substituents of p-tert-butylthiacalix[4]arenes led to increase molecular weight of supramolecular associates based on the macrocycles and "guest" molecules. The spatial structures of p-tert-butylthiacalix[4]arenes and their associates with phenylalanine were studied by two-dimensional ^1H - ^1H nuclear Overhauser effect NMR spectroscopy. The ability of aggregates based on p-tert-butylthiacalix[4]arenes and amino acids to effectively interact with bovine serum albumin with the formation of 7- to 8-nm nanoparticles was shown.

<http://dx.doi.org/10.1002/poc.3433>

Keywords

associates, molecular recognition, proteins, supramolecular chemistry, synthetic receptors, thiacalix[4]arenes