

Synthesis of bifunctional receptor for fluoride and cadmium based on calix[4]arene with thiourea moieties

Quiroga-Campano, C.

Gómez-Machuca, H.

Moris, S.

Jara, P.

De la Fuente, J. R.

Pessoa-Mahana, H.

Jullian, C.

Saitz, C.

© 2017 Elsevier B.V. A new calix[4]arene thiourea derivative bearing a benzothiazolyl moiety (L) was synthesized and characterized by single crystal X-ray, NMR and ESI-TOF. The binding ability of the bifunctional receptor towards several ions was investigated in acetonitrile by means of UV-Visible and NMR spectroscopy. The UV-Vis studies of receptor L demonstrated a stoichiometry of 1:1 for all ions studied. Also, recognize selectively F^- and Cd^{2+} with a detection limit of 97 and 37 μM , respectively. Also, 1H NMR titration of receptor L indicated that both thiourea bridge and phenolic hydroxyl functional groups played a critical role in the binding of F^- and Cd^{2+} ions. 1H NMR spectrum showed that receptor L has a flattened-cone conformation in solution that changes to a cone conformation in the presence of fluoride while cadmium maintained the initial conformation.