Study by fluorescence of calix[4]arenes bearing heterocycles with anions: Highly selective detection of iodide

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 The present work describes a study of complexation efficiency of calix[4]arenes bearing benzoimidazolyl, benzothiazolyl, and benzoxazolyl heterocycles (5-7) towards several anions. The binding ability of calixarene derivatives 5-7 towards selected anions of different molecular geometries such as: F⁻, HSO<inf>4</inf>⁻, I⁻, N<inf>3</inf>⁻, NO<inf>3</inf>⁻, NO<inf>2</inf>⁻, SCN⁻, ClO<inf>4</inf>⁻, Br⁻, CN⁻, Cl⁻, CH<inf>3</inf>COO⁻ CF<inf>3</inf>SO<inf>3</inf>⁻ in methanol, has been investigated by fluorescence spectroscopic techniques, all anions were used as tetrabutylammonium salts to avoid possible complexation of cationic species by the derivative calix[4]arenes. Fluorescent chemosensor ability of these three calixarene derivatives was highly selective for iodide in contrast with other anions st