

Calixarene derivatives in recognition of cations and anions

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Chemical modifications of calixarenes give rise to a great variety of derivatives with tuneable binding properties. The thermodynamic and kinetic aspects of the complexation of various metal ions by such compounds are studied in our laboratory. For instance, carbonyl calix[n]arene derivatives like esters, amides or carboxylic acids have shown their abilities to extract and complex alkali metal ions displaying interesting selectivities in the series.^{1,2} Calix[4]arene–crown ethers proved also to be remarkably selective within alkali series,³ whereas phosphorylated calix[n]arene derivatives have been shown to display high affinity and selectivity for lanthanides and actinides.^{3,4} Both kinds of compounds are still being studied as potential extractants for the treatment of nuclear waste.⁵ Selected results obtained in our laboratory with these compounds will be presented as well as some more recent ones pertaining to related oxa- and azacalix[n]arenes and to thiacalixarene counterparts. Other chemically modified calix[4]arenes have been designed as anionic recognition. First results obtained with positively charged derivatives will also be presented.

References

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