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### Synthesis and Cation Transfer Properties of Alkyl Calix[4]Aryl Phosphates. A New Series of Molecular Receptors

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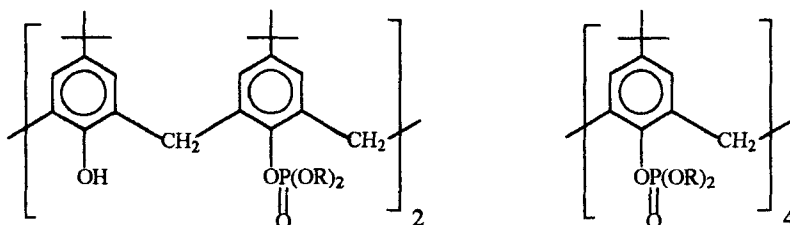
## SYNTHESIS AND CATION TRANSFER PROPERTIES OF ALKYL CALIX[4]ARYL PHOSPHATES. A NEW SERIES OF MOLECULAR RECEPTORS.

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**Abstract** Synthesis, structure and metal ion extraction ability of the new series of host molecules: alkyl calix[4]arylphosphates, are discussed.

Macropolycyclic architectures are particularly well suited for design of synthetic molecular receptors. Calixarenes received much interest as building block for the construction of new host systems. Our attention has focused on functionalization of phenolic OH groups (lower rim) of calix[4]arene. Bearing in mind a very strong complexation of phosphoryl P=O group with various metal cations we have prepared a series of calix[4]arene derivatives containing two or four phosphate functions, and their ion-binding properties were investigated.



New series of host systems were obtained by the reaction of tetra-tert-butylcalix[4]arene with dialkyl (from methyl to octyl) chloro(bromo)phosphates in the presence of potassium carbonate as a base in refluxing acetonitrile in 60-80% yield. The structure of obtained compounds was confirmed by  $^1\text{H}$ ,  $^{31}\text{P}$  NMR and mass spectroscopy. To examine the complexation characteristics of new compounds the liquid-liquid extraction of metal ions from water into chloroform by these podands was studied. It was observed extraction efficiency and selectivities which are absent for parent calixarene. Such behaviour suggests the strong participation of phosphoryl groups in the formation of complexes with metal cations.