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New Ligands: Poly(diphenylphosphorylmethyl)arenes

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New Ligands: Poly(diphenylphosphorylmethyl)arenes

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To find out the influence of structure factors on efficiency and selectivity of complexformation the oxides of aromatic tetra-, tri- and tetraphosphines were synthesized. The molecules contain as conformationally hard bridges between coordination centres (P=O groups) - fragments of polymethylarenes (isomeric xylenes, mesitylene, durene, dimethylnaphthalene, dibenzo-18-crown-6). These compounds were obtained by the Arbusov reaction of Ph_2POEt with corresponding bromomethylarenes. Extraction and complexformation with transplutonium elements, europium, uranium, copper, cobalt were studied. It was found, that among investigated ligands the action selectivity is determined, mainly, by the mutual location of P=O groups. A theoretical conformational analysis using the atom-atom potential function method was applied to the isolated ligands. To reveal conformers suitable for chelating the energy minimisation was carried out with the penalty function constraints keeping the $\text{P=O}\dots\text{O=P}$ distance at a specified value. As a result of such analysis the conformers, which are preferable for complexformation with cations of this or that ionic radius, were revealed and the estimation of the selectivity of ligands, which conform with experimental data, was presented.