



## Review

## Coordination Polymers based on calixarene derivatives: Structures and properties

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Metallic cations

Coordination bonds

Sorption properties

Magnetic properties

Luminescent properties

## ABSTRACT

The solid-state structures of 1D–3D Coordination Polymers based on the macrocyclic calixarene backbone have been reviewed, based on the chemical nature of appended substituents on the macrocycle platform. The coordination propensity of this class of ligands is analysed, taking into account the different coordinating atoms/groups that can be located on the macrocyclic ligand: (1) the unmodified inherently coordinating thiacalix[4]arene with the S bridges as donor atoms; (2) different conformations of calix[n]arene units, with appended O donor atoms; (3) the chemical modification of the upper rim of calix[n]arenes and thiacalix[n]arenes, with coordinating groups, in particular the use of the sulfonate groups; (4) calix[4]arenes, thiacalix[4]arenes and tetramercaptothiacalix[4]arene that have been modified at their lower rim (mono, di and tetra substitution) with coordinating groups like cyano, carboxylate, pyridyl and pyrazolyl groups. All the formed coordination networks have been described. A special attention has been drawn to the structural and functional properties of these extended networks: magnetic, luminescence, adsorption and catalytic properties. Perspectives and future challenges in this emerging field are also discussed.

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