

Homo-and heteronuclear crown-substituted tetrapyrroles: from molecules towards supramolecular ensembles

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During last 20 years the investigation of chemistry of tetrapyrrolic compounds is dedicated not only to monomeric compounds, but also to supramolecular assemblies, constructed from different tetrapyrrolic building blocks. The recent achievements in the synthesis of assemblies, formed by crown-substituted tetrapyrrolic compounds will be presented. On the one hand, the introduction of crown-substituents lets obtain the heteronuclear supramolecular assemblies of various architecture. On the other hand, the synthesis of rare earth elements crown-phthalocyaninates leads to sandwich complexes along which there are heteroleptic and heteronuclear complexes. The features of their synthesis, structure and properties will be discussed.

The possibilities to tune the architecture of supramolecular aggregates by alkali metal ions will be demonstrated on the examples of heteroleptic sandwich crown-phthalocyaninates.

In order to pass from single molecules to materials, the approaches towards the formation of Langmuir-Blodgett films and polymeric composites on the basis of crown-phthalocyaninates and their supramolecular assemblies were studied. The spectral, electrochemical and photorefractive properties of the such materials will be also discussed.