

Nanocomposites and nanomaterials

Nanomaterials based on -dicarbonyl complexes of some lanthanides (III)

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It is always relevant to obtain compounds with a set of specified properties. Recently, more and more attention of researchers has been attracted to metal-polymer materials. Interest in coordination compounds with luminescent properties has both a fundamental and an applied aspect. The former one is related to the establishment of the relationship between composition, structure and their properties, the latter one - using luminescent coordination compounds as precursors of electroluminescent materials in organic light-emitting diodes, luminescent labels in biology and analytical chemistry. In luminescent complexes of rare-elements, the central ion of lanthanide exhibits optical activity while the organic ligand serves as a sensibilizer, which transfers energy to the central ion. At the same time, the photophysical properties of the REE coordination compounds, in which the ligand itself acts as the radiation center, and the REE ion is optically inactive, have not been studied in practice. The synthesis and study of the characteristics of such compounds is of interest, since it will be possible to trace how the introduction of a "heavy" atom affects the luminescent properties of the optical part of the coordination compound.

The composition, structure, and luminescence characteristics of the lanthanide complexes with unsaturated -dicarbonyl ligands, metalopolymers and copolymers based on them were studied. The effect of heavy metal on the luminescence of a ligand is shown. The methods of dynamic light scattering and electron microscopy have established that all the compounds obtained, both monomers and metal polymers, are nanoscale systems. It is shown that synthesized compounds can be used as precursors of luminescent materials to create the OLED structures.