

Nanocomposites and nanomaterials

A new luminescent polymeric material containing metal complexes based -diketones and rare earth elements

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As functional materials, rare earth β -diketone complexes have been widely used in a lot of aspects, such as luminescent materials, organic electroluminescent technology, bioinorganic sensors and luminescent labels in bioaffinity assays. Most of rare earth β -diketone complexes have strong absorption properties in the UV-visible region, and have high thermal stability and good solubility in many organic solvents. The rare earth β -diketonate complexes not only display a high luminescent efficiency but also are suitable to be thermally deposited. Organic light emitting diodes (OLEDs) based on tetrakis β -diketonate rare earth complexes as electron transport and emitting layer were developed to obtain pure red OLED devices [1-3].

Polymers of Tb, Nd complexes **with 2,6-dimethyl-heptene-1-dione-3,5** were synthesized at the first time. Polymers were synthesized by free-radical polymerization in DMF.

The method of dynamic light scattering and the results of electronic microscopy showed that the obtained polymer systems are nanoscale. The system is homogeneous in terms of uniform distribution of metal throughout the polymer matrix as seen from the micrographs of powdered samples and films. The electroluminescent spectra of organic planar heterostructure ITO/PEDOT:PSS/[Tb(ligand)₃]/Al are examined and analyzed.

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