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Colour-tuneable double-layer polymeric films doped with lanthanide β-diketonate complexes.

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Streszczenie

Double-layer polymeric films doped with lanthanide β-diketonate complexes were obtained. To eliminate the ligand exchange during the film processing the layers are composed of poly(methyl-methacrylate) (PMMA) and poly(*N*-vinylpyrrolidone) (PVP) polymers, which have different solubilities in organic solvents. Under selective excitation the pure green emission of Tb^{3+} and red emission of Eu^{3+} is observed with maxima at 543–544 and 612–613 nm, respectively. The emission colour tuneability may be achieved not only by tailoring the films composition but also by changing the excitation wavelength. Films can be easily fabricated by sequential casting from solution, using e.g. the doctor blade technique. Moreover, due to the thermal stability of β-diketonate complexes the double-layer films can be also obtained by hot-press moulding of PMMA. The photophysical properties of the obtained films are presented and discussed. The emission intensity of Tb^{3+} tetrakis-complex with hexafluoroacetylacetonate ligand is significantly enhanced in PVP matrix as compared to that in PMMA.

Słowa kluczowe

rare-earth, β-diketonates, thin film, polymeric film, PMMA, PVP

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