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Nanoparticles based on gadolinium(iii) and europium(iii) complexes for biovisualization

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Abstract

© 2016, Springer Science+Business Media New York. Complexes $\text{Ln}(\text{TTA})_3$ and $[\text{Ln}(\text{TTA})_3 \cdot 1]$ ($\text{Ln} = \text{Eu}, \text{Gd}$; TTA is thenoyltrifluoroacetyl-acetonate; 1 is 2-(5-chlorophenylene-2-hydroxy)-2-phenylethylene-bis(2-methoxy)phosphine oxide) in individual form, and as a part of a core of the polyelectrolyte stabilized colloids have been studied by Mössbauer spectroscopy and X-ray powder diffraction. The photophysical and colloidal characteristics of the solutions of polyelectrolyte nanoparticles were studied in water, artificial cerebrospinal fluid solution, solution of bovine serum albumin, and human blood serum. A stability of a luminescent response of the nanoparticles in solutions of bovine serum albumin and human blood serum at 37 °C for 2 hours has been revealed. This is a prerequisite for the potential application of studied nanoparticles for biovisualization.

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Keywords

151 Eu, human blood serum, lanthanide(iii) complexes, Mössbauer spectroscopy, polyelectrolyte nanoparticles