

Self-assembly of chiral fluorescent nanoparticles based on water-soluble L-tryptophan derivatives of p-ter-butylthiacalix[4]arene

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Abstract

© 2017 Padnya et al. New water-soluble tetra-substituted derivatives of p-ter-butylthiacalix[4]arene containing fragments of L-tryptophan in cone and 1,3-alternate conformations were obtained. It was shown that the resulting compounds form stable, positively charged aggregates of 86-134 nm in diameter in water at a concentration of 1×10^{-4} M as confirmed by dynamic light scattering, scanning electron microscopy and transmission electron microscopy. It was established that these aggregates are fluorescently active and chiral. A distinctive feature of the compounds is the pronounced dependence of their spectral (emission and chiroptical) properties on the polarity of the solvent and the length of the linker between the macrocyclic and fluorophore parts of the molecule.

<http://dx.doi.org/10.3762/bjnano.8.184>

Keywords

Fluorescence, Nanoparticles, Self-assembly, Thiacalixarene, Tryptophan

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