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Novel quadruple-stranded heterometallic Ln_2Na complexes hosting sodium ions inside the cryptand-like cavity.

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Streszczenie

Coordination compounds of lanthanides $NEt_4[NaLn_2L_4(H_2O)]$, $Na[NaLn_2L_4(H_2O)]\cdot 2H_2O$ (Ln = La^{3+}, Nd^{3+}) with the bis-chelating carbacylamidophosphate ligand tetramethyl *N*,*N*′-(2,2,3,3,4,4-hexafluoro-1,5-dioxopentane-1,5-diyl)bis(phosphoramidate) (H_2L) were obtained for the first time *via* reactions of Na_2L with lanthanide nitrates. The complexes were characterized by IR and NMR spectroscopy and laser desorption/ionization mass spectrometry. From X-ray diffraction analysis, it was established that the complex anions in the obtained compounds have a structure of a quadruple-stranded helicate, which encapsulates a sodium cation and a molecule of water into the negatively charged environment of the ligand fluorine and carbonyl oxygen atoms. Upon excitation by the 266 nm harmonic line of the Nd:YAG pulsed laser, the $NEt_4[NaNd_2L_4(H_2O)]$ complex exhibits IR-emission at 300 and 77 K with the $^4F_{3/2}$ emission lifetime of 2 μs.

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