{[NiL][Co(NCS)$_4$]}$_n$, an organic-inorganic coordination polymer (L = 5,12-dimethyl-1,4,8,11-tetraazacyclotetradeca-4,11-diene).

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Streszczenie

The organic–inorganic coordination polymer of the general formula {[NiL][Co(NCS)4]}n (where L = 5,12-dimethyl-1,4,8,11-tetraazacyclotetradeca-4,11-diene) has been synthesized and characterized by IR, UV–Vis, DSC/TG, DTA/TG/MS methods. The magnetic behaviour of this complex has also been investigated within the temperature range 1.8–300 K. The IR spectrum indicates the presence of bridging M–NCS–M′ ligands. The absorption bands of UV–Vis spectrum confirm that the coordination environment of nickel(II) ions changes from square planar for [NiL](ClO4)2 to octahedral for {[NiL][Co(NCS)4]}n . The obtained compound is stable at room temperature, but within the range 246–282 °C decomposes in a three-stage process. The first step is associated with decomposition of the coordination polymer to the cationic [NiL]2+ and anionic [Co(NCS)4]2− units; the next two stages correspond to gradual decomposition of the macrocyclic ring. The value of molar magnetic susceptibility (χMT = 2.16 cm3 mol−1 K) indicates that the compound is paramagnetic.

Słowa kluczowe

Organic–inorganic coordination compound, [Co(NCS)4]2− units, Spectroscopic properties, Thermal decomposition, Magnetic behaviour

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