

Axially substituted ytterbium(III) monophthalocyanine - synthesis and their spectral properties in solid state, solution and in monolithic silica blocks.

Autorzy

Yuriy S. Gerasymchuk

L. A. Tomachynski

I. N. Tretyakova

Jerzy Hanuza

Janina Legendziewicz

Rok wydania

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Streszczenie

The axially substituted monophthalocyanine complexes of lanthanides are not enough investigated in comparison with sandwich-type phthalocyanine complexes of lanthanides because of their much lower stability in comparison with sandwich-type complexes. In this work, the new methods of obtaining monolithic silica blocks doped with acetato substituted Yb(III) monophthalocyanine complex are reported. The spectroscopic properties of this complex were measured and the results were compared for solution, solid state and xerogels dotted with PcYb(OAc). Besides of the usually observed emission of the phthalocyanines, the emission of the Yb³⁺ ion in IR region after excitation in phthalocyanine band (674 nm) for Yb(III) complex incorporated in silica gel was observed first time. Thus, this result confirms energy transfer in the system under study. The mechanism of energy transfer was proposed. It is worth to notice, that Yb(III) emission was not observed for complex in solution and at solid state. The IR and Raman spectra of ytterbium ion in phthalocyanine complexes are reported and discussed.

Słowa kluczowe

Ytterbium(III), Phthalocyanine, Sol-gel method, Spectroscopic properties, Emission, Aggregation, Charge transfer

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