

Molecular recognition of nitrogen-containing bases by Zn[5,15-bis-(2,6-dodecyloxyphenyl)]porphyrin

Maltceva O., Mamardashvili G., Khodov I., Lazovskiy D., Khodova V., Krest'yaninov M., Mamardashvili N., Dehaen W.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2016 Informa UK Limited, trading as Taylor & Francis Group. By means of spectrophotometric titration and ¹H NMR spectroscopy, the selective binding ability of the Zn-5,15-bis-(2,6-dodecyloxyphenyl)porphyrin towards nitrogen containing organic molecules of various nature has been studied. It has been found that the presence of long alkoxy substituents at the ortho-positions of the Zn-porphyrin phenyl rings prevents the axial coordination of tertiary amines and, conversely, creates favourable conditions for binding of a primary diamine due to the presence of additional binding sites, namely the oxygen atoms of the ortho-ortho'-dodecyloxy substituents of the meso phenyl groups. The formation of stable complexes with multiple binding sites has been confirmed by DFT quantum chemical calculations and two-dimensional NMR experiments.

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Keywords

binding ability, Porphyrin, receptor, sensing device, spectrophotometric titration

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