

**SUPRAMOLECULAR ARCHITECTURED WATER SOLUBLE BASED ON  
COORDINATION COMPOUNDS WITH N-DONOR LIGANDS**

**Adelina-Antonia Andelescu<sup>1</sup>, Carmen Cretu<sup>1</sup>, Elisabeta I. Szerb<sup>1</sup>, Anca Silvestru<sup>2</sup>**

<sup>1</sup>*“Coriolan Dragulescu” Institute of Chemistry, 24 Mihai Viteazu Bvd, 300223 Timisoara, Romania*

<sup>2</sup>*Babes-Bolyai University, Faculty of Chemistry and Chemical Engineering, Chemistry Department, 11 Arany Janos, 400028 Cluj-Napoca, Romania  
e-mail: andelescu.ade@gmail.com*

**Abstract**

Chromonic systems are a subclass of lyotropic liquid crystal phases, which occur from face-to-face aggregation into columns of the molecules which contain planar aromatic moieties and solubilizing hydrophilic and/or ionic groups. However, lately coordination complexes based on d-block metal centers with bulkier geometries like octahedral iridium(III) complexes have been shown to self-assemble spontaneously into ordered supramolecular organizations in water at low concentrations, like the classical chromonics. The interest in this class of materials derives from their potential applications in biosensing and imaging, thin film polarizers, micro-patterning, nano-fabrication, etc. [1]. Thus, developing such lyotropic metallomesogens based on rhodium(III) and platinum(II) coordination compounds may lead to materials with potential applications in medicine as drug delivery systems [2] and/or therapeutic agents [3].

On this background, herein we report the synthesis and characterization of some new water soluble heteroleptic Rh(III) and Pt(II) complexes. The nature of the complexes was established by elemental analysis and molar conductivity and fully characterized by IR, <sup>1</sup>H-NMR and UV-Vis spectroscopy. The mesomorphic properties in water of the complexes were investigated by polarized optical microscopy (POM) using the Lawrence penetration method. The complexes show ability to self-assembly into chromonic phases in water at room temperature. The aggregation behavior in water of Rh(III) complexes will be discussed.

**Acknowledgements**

This work was supported by a grant of the Ministry of Research, Innovation and Digitization, CNCS/CCCDI – UEFISCDI, project number **PN-III-P1-1.1-PD-2021-0427**, within PNCDI III.

**References**

- [1] J. E. Lydon, *J. Mater. Chem.* 20 (2010), 10071-10099.  
[2] J. Markham, J. Liang, A. Levina, R. Mak, B. Johannessen, P. Kappen, C.J. Glover, B. Lai, S. Vogt, P.A. Lay, *Eur. J. Inorg. Chem.* 12 (2017) 1812–1823.  
[3] (a) C.-H. Leung, H.-J. Zhong, D.S.-H. Chan, M. Dik-Lung, *Coord. Chem. Rev.* 257 (2013) 1764–1776; (b) M. Dik-Lung, M. Wang, Z. Mao, C. Yang, C. Ng, C. Leung, *Dalton Trans.* 45 (2016) 2762–2771; (c) M. Dik-Lung, L.-J. Liu, K.-H. Leung, Y.-T. Chen, H.-J. Zhong, D.S.-H. Chan, H.-M.D. Wang, C.-H. Leung, *Angew. Chem. Int. Ed.* 53 (2014) 1–6.