

# Coordination Compounds – Design, Synthesis, Characterization, and Assessment of Practical Application

*Complexes; Schiff bases; Crystal structure; Biological activity; OLED materials*

Scientific research of this group involves the syntheses, physicochemical and structural characterization of novel coordination compounds of d-metals with different classes of new O-, N-, S- Se- and P-donor ligands. Among these ligands, the emphasis is on the Schiff bases and derivatives of pyrazole due to their expected biological potential (e.g. antioxidant, antimicrobial, antiproliferative activity). Besides, our aim is to explore other possible practical applicability of the newly obtained compounds like photoluminescence, electrochemical or biosensoric potential, etc. One of the tasks is to optimize the synthetic route in order to obtain the compounds in the form of single crystals suitable for X-ray structure analysis and to increase the yield and purity. By comparison of structures of new compounds and their physicochemical and biological properties, the relationships between the structures and the selected function are studied. This process involves the utilization of Cambridge Structural Database with data to reveal the structural trends in investigated classes of compounds. Besides DFT calculations are carried out to find the correlations between the experimental data and up-to-date theoretical approaches.

## SELECTED EQUIPMENT

- Thermoanalytical equipment TA Instruments SDT Q600;
- Spectrophotometer T80+UV/vis PG Instruments Ltd;
- Magnetic balance Magway MSB-Mk1;
- Conductivity Meter Jenway 4510;
- X-ray crystallography equipment GEMINI S Oxford Diffraction.



## COLLABORATIONS

- University of Szeged, Faculty of Medicine, Department of Medical Microbiology and Immunobiology, Dóm tér 10, Szeged H-6720, Hungary – Investigation of biological potential of the obtained compounds.
- National Centre for Scientific Research "Demokritos", Institute of Nanoscience and Nanotechnology, Terma (End) Patriarhou Gregorion Str, PO Box 60228 Aghia Paraskevi, 15310 Athens, Greece – Investigation of photoluminescence of the ligands and obtained complexes and assessment of possible application as OLED materials.



## SELECTED PROJECTS

**Title:** *Synthesis, structural and biological characterization of new complex compounds*

**Type:** National project

**Duration:** 2006-2010

**Contact person:** Prof. Dr Vukadin Leovac and Prof. Dr Ljiljana Vojinović Ješić

**Title:** *Design, synthesis, characterization and assessment of practical applications of coordination and organometallic compounds*

**Type:** National project

**Duration:** 2006-2011

**Contact person:** Prof. Dr Katalin Mészáros Szécsényi, Prof. Dr Ljiljana Vojinović Ješić and Dr Mirjana Radanović

**Title:** *Synthesis and characterization of metal complexes with ligands with biological activity*

**Type:** Bilateral project of Provincial Secretariat for Science and Technological Development of Vojvodina

**Duration:** 2011-2015

**Contact person:** Dr Vukadin Leovac and Prof. Dr Ljiljana Vojinović Ješić

## CONTACT PERSONS

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