


Editorial

# Recent Progress in Coordination Chemistry

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The following Special Issue of *Inorganics* is based on the discussions initiated at the International Conference on Coordination and Bioinorganic Chemistry (ICCBIC), which has been organized and held biennially since 1964 [1–3]. The 28th continuation of this series was held between 5 and 10 June 2022 at Smolenice Castle, Slovakia, and was named “Progressive Trends in Coordination, Bioinorganic and Applied Inorganic Chemistry”. It hosted 39 scientists from Slovakia and 46 scientists from 14 European, North American, and Asian countries (Figure 1). During the conference, 66 lectures were given (out of them, 27 were a part of the “Young Scientists Section”) and 18 posters were presented. We are pleased to say that the active participation of 38 colleagues younger than 30 years old is a clear sign that there is no need to worry about the future of coordination chemistry nor ICCBIC.



**Figure 1.** Participants of XXVIII ICCBIC.



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Traditionally, the lectures are divided into four sections. In section A, (Electron, Molecular and Crystal Structures) Prof. Roman Boča (Slovakia) gave a very inspiring plenary lecture called “Magnetic Anisotropy of Hexa-, Penta- and Tetracoordinate Ni(II) Complexes”. Section B (Solution and Solid-State Reactivity) was opened by Dr. Rozina Khattak (Pakistan), who spoke about “Open problems in Green Approach to Sensitizer-Mediator Interaction in DSSC: Redox Mechanism of Dicyanobis(2,2'-bipyridyl)iron(III)-hexacyanoferrate(II) in Water”. Prof. Pál Sipos (Hungary) introduced section C (Applied Inorganic and Coordination Chemistry) by presenting a lecture titled “Chemists Have Solutions!—Understanding Industrial Problems by Using the Knowledge Offered by Solution Chemistry”. Finally, section D (Complexes in Human Medicine and in the Environment) was led by Prof. Daniel Ruiz-Molina (Spain), who spoke about “Coordination Polymers at the Nanoscale: Old Materials New Tricks in Therapy and Diagnosis”.

In 2017 the granting of the Ján Gažo Award was established at the ICCBIC, which comprises the Ján Gažo Medal and a certificate from the Slovak Chemical Society. The 2022

prize was awarded to Prof. Roman Boča for his considerable contribution to the field of inorganic and coordination chemistry and for founding the scientific school of quantum chemistry and magnetochemistry of coordination compounds in Slovakia.

As is apparent, this year's ICCBIC established a partnership with the open access journal *Inorganics*, which is published by MDPI. In this vein, *Inorganics* financially supported "The Best Oral Presentation Award for the Young Scientists Section", which is an ultimate novelty at ICCBIC. Two first prizes were awarded; one went to Ali Kaiss (Switzerland), who delivered a talk called "From Macrocycles into Assembled Chain-mails", and the other one went to Sandra Koziel (Poland), who gave a lecture called "New Heteronuclear Iridium-Copper Complexes with Phosphine Derivatives of Fluoroquinolone Antibiotics—Together is Better".

Hereby, we invite you to form a picture of the spirit of the conference by reading this Special Issue of *Inorganics*, which is devoted to XXVIII ICCBIC. In total, ten contributions were submitted, of which eight are original papers and two are perspectives.

In the work of Švorec et al., the synthesis and thorough characterization of five novel Cu(II) complexes is reported, which perform favorably as SOD mimetics [4].

Sünkel et al. made public their serendipitous synthesis of octacyanofulvalenediide dianion and its silver and potassium coordination polymers [5].

Gyurcsik et al. studied the solution chemistry of Cd(II) and Hg(II) cations as competitors of Zn(II) in a specific artificial zinc-finger protein and found them to have surprisingly different behaviors [6].

Potočňák et al. introduced the XIX and XX parts of their series on low-dimensional compounds containing bioactive ligands. They reported novel complexes with derivatives of 8-hydroxyquinoline—namely, six Cu(II) systems in their first contribution and five Zn(II) systems in the second one. Interesting bioactivity was proved in some of these systems [7,8].

In his purely theoretical work, Vladimir S. Mironov raised the question of achieving the maximal angular momentum in complexes of 3d transition metals and showed that their record case of a Co(II) system can hardly be beaten [9].

Segl'a et al. contributed via a magnetic reinvestigation of two Co(II) coordination polymers differing only in the saturation of their bridging ligands. Both of them showed a slow relaxation of magnetization, which was correlated with stiffness of the bridge [10].

The work of Boča et al. filled a gap in textbooks of theoretical chemistry by calculating the energy levels and magnetic functions for pentacoordinated  $3d^5$  to  $3d^9$  complexes with trigonal bipyramid and vacant octahedron geometries [11].

Finally, a perspective work on recent bis(benzimidazole) complexes and their biological activities was offered by Kopel and Šindelář [12] and, in the second perspective of this Special Issue, Gailer and Doroudian discussed the bioinorganic consequences of exposure to toxic metals and metalloids in context of the "environment-blood-organ" pathway [13].

We would like to conclude by thanking all authors for making this Special Issue possible and expressing our hope that the audience will share our passion for coordination chemistry, both remotely by reading this collection of works and also in-person by attending our upcoming XXIX ICCBIC.

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