

Preface

The 18th International Conference on Physical Organic Chemistry (ICPOC-18) took place at the Gromada Hotel in Warsaw, Poland on 20–25 August 2006 under the local auspices of Warsaw University and the Polish Chemical Society. It was organized by a local Organizing Committee from the Department of Chemistry of Warsaw University led by Prof. Tadeusz M. Krygowski.

Although physical organic chemistry began in the 1930s and at the beginning was concerned mostly with the mechanisms and kinetics of organic reactions and their dependence on structural and medium effects, a great extension of the field toward bioorganic, organic, organometallic, theoretical, catalytic, supramolecular, and photochemistry has been observed for decades now. Representative topics for modern physical organic chemistry include: reaction mechanisms; reactive intermediates; bioprocesses; novel structures; reactivity relationships; solvent, substituent, isotope, and solid-state effects; long-lived charges; sextet or open-shell species; magnetic, nonlinear optical, and conducting molecules; and molecular recognition. Contributions from all of these fields were presented.

About 220 researchers, representing 31 countries, participated in the conference. The following eight plenary lectures were presented:

- R. Huber (Nobel laureate, Germany): “Molecular machines in biology”
- A. Yonath (Israel): “The spectacular ribosomal architecture: Nascent proteins voyage towards folding via antibiotics binding-pockets”
- P. Coppens (USA): “Time-resolved diffraction studies of molecular excited states and beyond”
- K. S. Kim (South Korea): “De novo design based on nano-recognition: Functional molecules/materials and nanosensors/nanodevices”
- I. P. Beletskaya (Russia): “Mechanistic aspects and synthetic application of carbon–carbon and carbon–heteroatom bonds formation in substitution and addition reactions catalyzed by transition-metal complexes”
- S. Fukuzumi (Japan): “New development of electron-transfer catalytic systems”
- D. Braga (Italy): “Making crystals from crystals: A green route to crystal engineering and polymorphism”
- L. Latos-Grażyński (Poland): “Carbaporphyrinoids: Exploring metal ion–arene interaction in a macrocyclic environment”

Additionally, 17 invited talks and, during two parallel sessions, 51 oral communications were presented. There were more than 100 poster presentations.

I am pleased to introduce a representative selection of outstanding papers based on plenary and invited lectures delivered at ICPOC-18. In addition to the contributions mentioned above, this volume contains: a discussion of modern understanding of aromaticity (P. Fowler, UK); fascinating studies of new mechanisms focused on reactive intermediates (R. Moss, USA); interpretation of acidity, basicity, and hydride affinity by the trichotomy paradigm (Z. Maksić, Croatia); a quantum approach to proton transfer across hydrogen bond (F. Fillaux, France); a discussion of self-assembly of nickel(II) pseudo-rotaxene nanostructures on Au surface (R. Bilewicz, Poland); a discussion of synthesis and properties of macrocyclic receptors for anions (J. Jurczak, Poland); a description of novel organic–inorganic frameworks (J. Klinowski, UK); an application of microemulsions as microreactors (J. R. Leis, Spain); a discussion of silicon rehybridization and molecular rearrangements in hypercoordinate silicon dichelates (D. Kost, Israel); and a description of solvation in pure and mixed solvents (O. El Seoud, Brazil). All of these papers exemplify the broad range and diversity of interests of the participants and characterize the present and future challenges in physical organic chemistry.

The social program of the conference included: a welcome reception; a Chopin music concert organized in cooperation with the Frederic Chopin Society; conference excursions, including Warsaw Old Town and Żelazowa Wola, the house where Chopin was born; the Warsaw Uprising (1944) Museum and the Heroes of Ghetto Memorial; and folk music dances during the conference dinner.

Because ICPOC-18 was attended by quite a number of young chemists from all over the world, it can be expected that the next conference in this series, ICPOC-19, which will be held in July 2008 and is being organized by Profs. J. Ramon Leis from the University of Santiago de Compostela and A. Santaballa from the University of A Coruna (Spain), will not only reflect recent developments and the rich potential of physical organic chemistry, but will also demonstrate the aspirations of younger generations of scientists in this field.

Krzysztof Woźniak
Conference Editor