Preface

The 19th IUPAC Conference on Physical Organic Chemistry (ICPOC-19) was held at the University of Santiago de Compostela, Santiago, Spain, 13–18 July 2008 under the local auspices of the Universities of Santiago, A Coruña, and Vigo. About 400 delegates attended ICPOC-19 from 39 countries, to participate in a scientific program comprising 11 plenary lectures, 22 invited lectures, 102 oral communications, and 224 posters.

Physical organic chemistry, the study of the interrelationships between structure and reactivity in organic molecules, is a relatively young subfield of organic chemistry. At the end of the 20th century, there was a perception by some that chemists thoroughly understood organic reactivity and that there were no important problems left. This view ignores the fact that while the rigorous treatment of structure and reactivity in organic structures that is the field's hallmark continues, physical organic chemistry has expanded to encompass other disciplines. In fact, the application of quantitative tools taken (historically) from physical chemistry to the solution of problems in mechanisms or in understanding properties has evolved to complex molecular problems, and is now being applied in studying catalysis, biochemistry, photochemistry, reactivity in the vapor phase, surface science, materials sciences, and other areas. Indeed, when considering a nice article on molecular biology, drug design, nanosystems, and catalysis, we observe that the experimental interpretation is based on a physical organic chemistry approach.

This issue of *Pure and Applied Chemistry* contains 15 contributions corresponding to plenary and invited lectures presented at ICPOC-19: Symmetry of hydrogen bonds (C. Perrin, USA); Stabilizing reactive intermediates through site isolation (C. Copéret, France); Divalent carbon(0) compounds (G. Frenking, Germany); NMR spectroscopy and ion pairing: Measuring and understanding how ions interact (P. Pregosin, Switzerland); Photochemical routes to metal nanoparticles (J. Scaiano, Canada); Proton transfers in aromatic systems. How aromatic is the transition state? (C. Bernasconi, USA); How to predict changes in solvolysis mechanisms (H. Mayr, Germany); Kinetics and mechanism of the aminolysis of thioesters and thiocarbonates in solution (E. Castro, Chile); Understanding solvation (O. El Seoud, Brazil); Steric and electronic effects in S_N2 reactions (E. Uggerud, Norway); Design of carborane molecular architectures with electronic structure computations: From endohedral and polyradical systems to multidimensional networks (J. Oliva, Spain); Mapping catalytic promiscuity in the alkaline phosphatase superfamily (F. Hollfelder, UK); DNA nucleobases properties and photoreactivity: Modeling environmental effects (L. Serrano-Andrés, Spain); Molecular organization and recognition properties of amphiphilic cyclodextrins (R. de Rossi, Argentina); Ionic liquids: Solvation ability and polarity (C. Chiappe, Italy).

The conference program, as reflected both by the plenary and invited lectures as well as the oral communications, illustrates both the old and the new trends covering different research areas such as: reaction mechanisms, computational chemistry, synthetic chemistry, catalysis, gas-phase reactions, surface chemistry, molecular machines, organometallic chemistry, nanoscience, green chemistry, colloidal chemistry, supramolecular chemistry, and biochemistry. Papers presented in this issue of *Pure and Applied Chemistry* are representative of the different topics covered by the conference. We hope that they will serve as a stimulus for work by future generations of physical organic chemists.

Luis Garcia-Rio
Conference Editor