

## WELCOME ADDRESS

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Wilhelm OSTWALD (1853-1932), Nobel Laureate, stated at the beginning of this century : 'Organic Chemistry is the Chemistry of modern times' recapitulating the prodigious developments that this discipline had experienced on the methodological as well as on the conceptual level since the 1850s, and its applications which had substantially changed agriculture, industry and medicine. But the father of physical chemistry was eager to complete his sentence : 'If organic chemistry is the chemistry of modern times, physical chemistry is the chemistry of the future'.

The chemist who consults *Beilstein Handbuch der Organischen Chemie* is immediately stricken by the diversity and the extraordinarily high number of organic reactions. But he will often realize that most of them are reactions devoid of any selectivity : each of these systems provides numerous products that are generally difficult to separate from one another. This results from the fact that the evolution of a system of organic reagents is more often than not complex and that a qualitative approach is not able to master it.

The chemical thermodynamics and kinetics, those real pearls of physical chemistry, have contributed to develop a new interdisciplinary field at the very heart of chemistry : physical organic chemistry. The quantitative study of substitution, addition and elimination has led to the establishment of laws governing the mechanisms of fundamental reactions, as also the quantitative relationships between the reactivity and molecular structure.

I take this opportunity to pay a tribute to the contribution of Prof. Herbert C. BROWN, chemistry Nobel Laureate who is here among us, in the field of the electrophilic aromatic substitution that has led to a better understanding of the nature of the substituents constants. Allow me also to call your attention to the work of Prof. Louis HENRY (1834-1913), of this university; HENRY had developed and studied, with the resources of his time, what he called 'la solidarité fonctionnelle', being so a forerunner of the study of the mutual interaction of substituents and functions in a single organic molecule. This classical concept finds today its quantitative confirmation in the algebraic correlations also known as linear free energy relationships.

Physical organic chemistry has, however, considerably expanded and diversified from its origin. It now encompasses : *quantum chemistry*, about which Prof. Kenichi FUKUI, Nobel Laureate, whose presence I am glad and proud to acknowledge, will lecture tomorrow; the *various spectroscopies* indispensable today, not only in routine analyses, but also in structural and mechanistic research; *solvent effects* that modify the intrinsic properties of molecules; the reactivity of organic molecules in *structured media* including among others : catalysis by micelles, by crown ethers and cyclodextrins and reactions in solid and liquid organic crystals; the description and the study of *reaction intermediates* like, for instance, free radicals, carbenes and nitrenes, carbanions, ylids and carbonium ions; and then, last but not least, *organic photochemistry*, at the height of its development, that is interested in the properties of excited states : those states that, because of their increased energetic potential, enjoy new properties.

With the enhanced role of physical organic chemistry, the chemist will be able to control better the organic syntheses by increasing the selectivity of reactive systems; he will mimic the enzymic catalysis in its marvellous specificity; he will master pollution, optimize the use of natural resources and reduce our energy spending. Finally, I hope you will agree with me when, rephrasing OSTWALD's statement, I am asserting that physical organic chemistry is not only a chemistry of today but also a chemistry of tomorrow.

This Conference is the sixth of a well established series which started exactly 10 years ago in Cran-sur-Sierre, Switzerland. The criteria of high scientific quality associated with the series has been maintained for this meeting. The 11 plenary lectures delivered (and published in this issue) as well as the 150 scientific communications, presented orally or by poster, deal with several modern aspects of physical organic chemistry. The abstracts of papers have been published in *Bulletin des Sociétés Chimiques Belges* (91, 1982, No. 5).