

19<sup>th</sup> IUPAC International Symposium on Ionic Polymerization (IP '09) has been held on July 26–31, 2009, in Kraków (Cracow), Poland at the *Auditorium Maximum* of the Jagiellonian University - the oldest University in Poland (founded 1364).

The IP '09 was honoring the 100th Anniversary of the birthday of Michael Szwarc – a discoverer of ionic, living polymerization.



Prof. Michael Szwarc – 1980s

The IP-series symposia are organized biannually in various IUPAC country members. The former Symposium (IP '07), organized by the University of Bayreuth, has been held in Kloster Banz (Germany); the recent one (IP '11) was organized by the University of Akron (Massachusetts, USA). One of the first symposia in this series took place in Jabłonna, Poland, 1975 as the “1st IUPAC International Symposium on Polymerization of Heterocycles”.

Currently, these symposia series encompass Anionic, Cationic, and Ring-Opening Polymerizations and address both fundamental and applied research. Papers related to other techniques of living/controlled polymerizations are also welcomed, as well as contributions on the properties and analysis of materials prepared by techniques of controlled polymerizations.

IP '09 has been organized jointly by Center of Molecular and Macromolecular Studies (CMMS) Polish Academy of Sciences (Łódź, Poland), Faculty of Chemistry, Jagiellonian University, (Kraków,

Poland) and the The M. Szwarc Polymer Research Institute - State University of New York (USA).

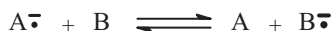
Chairman of the Symposium was Prof. Stanisław Penczek; the Program Committee was co-chaired by Profs. Andrzej Duda and Krzysztof Matyjaszewski; the Organization Committee was directed by Profs. Maria Nowakowska and Israel Cabasso.

The scientific IP '09 program has been preceded by the special session honoring the 100th Anniversary of the birthday of Michael Szwarc, born in Poland in 1909 in Będzin, former founder and Director of the Polymer Institute at the New York State University (College of Forestry) in Syracuse upstate of New York (USA). First, the memorial talks were delivered by Profs. Maria Nowakowska (Jagiellonian University): “Michael Szwarc’s *Dr. Honoris Causa* of the Jagiellonian University; Mitsuo Sawamoto (Kyoto University): “Inamori Prize for Michael Szwarc” and Zbigniew J. Florjanczyk (Warsaw University of Technology): “Michael Szwarc – student of the Warsaw University of Technology”. Then, coworkers and friends of Prof. Szwarc, who contributed to the living polymerization studies development in various countries: Moshe Levy (USA, Israel), Johannes Smid (USA), Józef Jagur-Grodzinski (Israel), Roderick P. Quirk (USA), Marcel van Beylen (Belgium), Shohei Inoue (Japan), Pierre Sigwalt (France), Hartwig Hoecker (Germany), Francesco Ciardelli (Italy), Jean-Pierre Vairon (France), Emile Franta (France), Przemysław Kubisa (Poland), Krzysztof Matyjaszewski (USA, Poland), and Israel Cabasso (USA), presented their (very often anecdotal) memoirs. Moreover, the letters from Eric J. Goethals (Belgium), Joseph Kennedy (USA), Shiro Kobayashi (Japan), George Olah (USA) – the Nobel Prize Laureate, and Paul Rempp (France), who were not able to participate personally to the IP '09 Symposium, have been presented. This session has, finally, been particularly honored by the presence of Michael Szwarc’s daughter - Meira Szwarc-

Penchina (together with her husband Claude) as well as of Michaels' son - Ralph, who delivered very personal and emotional talks. All of these presentations have been videofilmed (several hours) and the DVD copies are available from the IP '09 organizers.

The first experiments and observation of living polymerization have been described by Moshe Levy and Johannes Smid. M. Levy had actually performed this experiment together with Michael during the night when he returned from the lecture tour in 1956. Below the story of the living polymers discovery is given, copied from the the Michael's own description, given in the Highlights published in *Journal of Polymer Science, Part A: Polymer Chemistry* **36**, IX–XV (1998):

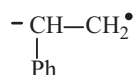
(cit.) "It was meeting Professor Samuel Weissman, a pioneer in ESR studies of radical anions, that started my interest in ionic polymerization. At that time, we'd published our first paper on methyl affinities of aromatic hydrocarbons and Sam remarked, when he and I met, that he'd read it with interest and found the sequence of aromatic hydrocarbons reported in our paper fully matched the sequence of their electron affinities, which he, jointly with Professor Lipkin, had just investigated. I asked how the electron affinities were determined, and he described their (unpublished at the time) study of equilibria of electron transfer illustrated by the scheme:



**Scheme 1**

where A and B denote some aromatic hydrocarbons such as naphthalene, anthracene, pyrene, perylene, etc. I listened intently to his explanation, knowing hardly

anything about radical anions, and as he stressed that electron is transferred from one hydrocarbon to another, it occurred to me that the transfer to a monomer such as styrene should lead to an interesting situation. In my naive thinking I imagined styrene to be reduced to a radical anion



a species acting as a carbanion on one of its end, and as a genuine radical on its other terminus, both capable of initiating polymerization of styrene but by a *different* mechanism. The possibility of a simultaneous radical and anionic polymerization intrigued me and I asked Sam: "Did you transfer electrons to styrene?" His reply was brief: "No use, it polymerizes." I asked then whether he would allow us to look into this useless polymerization. After getting his consent I started jointly with Moshe Levy and the late Ralph Milkovich, most efficient coworkers, our initial investigation..."

The Scientific program of 19th IUPAC International Symposium on Ionic Polymerization encompassed forty four half-hour invited lectures and forty four posters. The Symposium gathered hundred and twenty attendees from twenty one countries: Austria, Belgium, Belarus, Bulgaria, Cyprus, Czech Republic, Denmark, France, Greece, Spain, Israel, Japan, Germany, Poland, Sweden, The Netherlands, Turkey, USA, Hungary, United Kingdom, and Italy.

This volume consists of papers based of some selected invited lectures and poster presentations.

*Stanislaw Penczek and Andrzej Duda*