

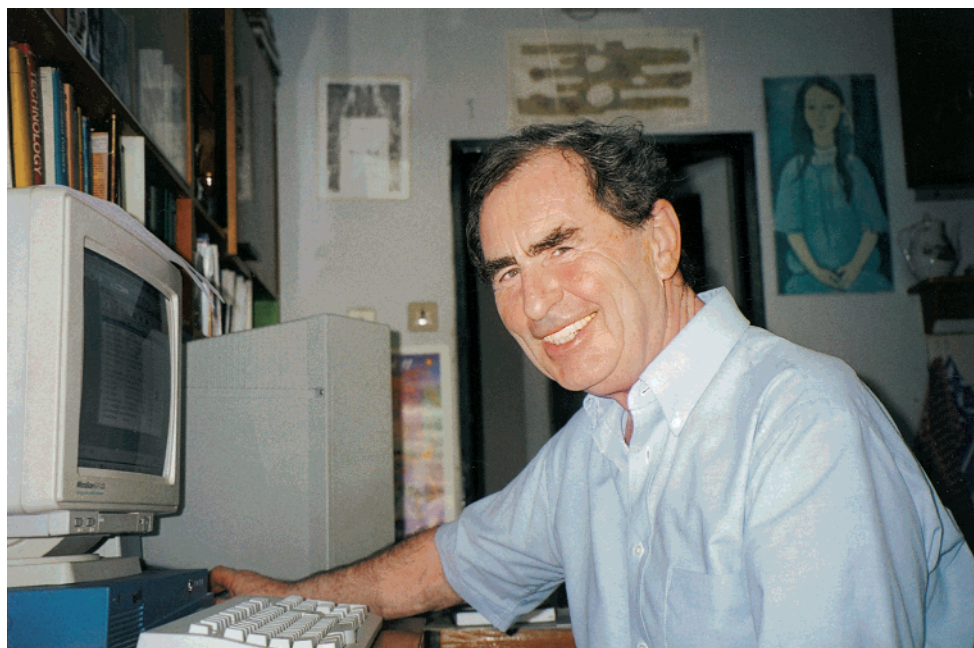
# Macromolecules

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Karel Dušek



Born May 6, 1930, in Prague, Karel Dušek spent most of his youth in Milevsko, a small town in the south of Bohemia, where his parents owned a grocery store. His scientific education took place in Prague where he studied at the Institute of Chemical Technology from 1949 until 1953 when he obtained his MSc degree. After that he moved to Pardubice, one of the centers of chemistry in the country, to work at the Institute of Synthetic Resins and Lacquers (now SYNPO Ltd.) as a research associate. There he prepared his PhD thesis dealing with the polycondensation of thiourea and formaldehyde. In 1958 he defended the thesis at the Institute of Physical Chemistry of the Czechoslovak Academy of Sciences (CSAS) and was promoted to research fellow at the Pardubice Institute. It was here that his lifelong interest in formation–structure relations of polymers was raised with the emphasis on the chemistry and physics of cross-linking, in which field he was to become one of the world's leading experts.

In 1965 he started his career in Prague as a senior research fellow at the well-known Institute of Macro-

molecular Chemistry of the Czechoslovak Academy of Sciences (now Academy of Sciences of the Czech Republic, ASCR). He passed through the ranks and was principal scientist (since 1970), head of the Department of Polymer Physics (1975–1992), and head of the Laboratory (later Department) of Polymer Networks and Mechanical Properties. In 1970 he received the DSc degree from the CSAS. His present position in the Institute is principal scientist and projects coordinator.

Karel Dušek has contributed and continues to contribute significantly to the theories of network formation, gelation, structural characterization, insight into the relations between structure and mechanical and other physical properties of polymers, and the understanding of swelling, phase separation, and other transitions in swollen polymer networks. These studies found practical applications in the fields of thermosets, cross-linked elastomers, coatings, and gels. His experimental work is mostly based on epoxy resins, polyurethanes, and vinyl–divinyl systems. He published about 300 original and review papers in his broad field of interest. By the end of 1994 the SCI recorded about 3000

citations of his work.

Of course, such a record does not go unnoticed, and well-deserved degrees, honors, and awards have come Karel's way. He is a full professor of Macromolecular Chemistry at the University of Pardubice and an associate professor of Physics: Faculty of Mathematics and Physics at the Charles University, Prague. In 1988 he was elected Corresponding Member of the CSAS, which institution ceased to exist with the separation of Czechoslovakia into two countries at the end of 1992. He is one of the scholars who founded the Learned Society of the Czech Republic and was later elected chairman of the Board of Directors, Foundation for the Promotion of Czech Science, affiliated with the Learned Society mentioned above.

Outside the Czech Republic, Dušek's great talents have not been missed. In France he is professor first class in the University of Bordeaux and INSA, and he holds an honorary doctor's degree in the Polytechnic University of Wrocław (Poland). He serves on the board of the International Polymer Networks Group, having been its vice-chairman (1986–1990), chairman (1990–1994), and treasurer since 1994. He is the Czech national representative in the European Polymer Federation.

Dušek also spent time in laboratories abroad to collaborate closely with colleagues in the field. His stay in 1967–1968 as a senior research fellow with the late Professor Willem Prins at the Technical University of Delft (NL) resulted in among else the classic review paper on polymer networks.<sup>1</sup> A similar sojourn in 1975 as a visiting professor in the University of Essex (UK) with Professor Manfred Gordon's group led to the incorporation of graph-theoretical methods in Karel's work.<sup>2</sup> We mention further his visiting professorship with Professors Bill MacKnight and Frank Karasz in the University of Massachusetts, Amherst (1987), and guest professorships in France at the Université de Pau et des Pays d'Adour, Pau, and the Institut National des Sciences Appliquées de Lyon (1994 and 1996). In addition, many industrial organizations all over the world have been known to seek his counsel so that travelling has early on become second nature for Karel.

Such a distinguished career deservedly drew a number of awards: Karel Dušek received the annual prize of the CSAS two times, in 1971 and 1981, the silver medal of Charles University, Faculty of Mathematics and Physics, in 1978, the state prize of Czechoslovakia in 1988, the annual prize of the ASCR in 1995, and the silver medal of the City of Paris in 1990.

He is an editor for various journals: *Advances in Polymer Science*, *Polymer Bulletin*, *Computational and Theoretical Polymer Science*, *Polymer Networks & Blends*, *Designed Monomers and Polymers*, and *Polymer Contents*.

Overseeing this impressive record, there is one particular instant that we would like to recall on this occasion. In 1968, during one of the first of the most

memorable Prague Microsymposia on Macromolecules, Karel used the opportunity to see Professor Don Patterson of Montreal in order to deal with a caustic review they had received about a joint manuscript submitted earlier. It was the now famous classic paper<sup>3</sup> predicting purely theoretically that a swollen network should be capable of separating into two swollen network phases with different degree of swelling, provided the degree of cross-linking is low. Karel and Don showed that network theory even in its simplest Flory–Rehner form already implied this unusual phenomenon, so far unknown. Small wonder that disbelief and criticism were invoked. However, Karel and Don were proved right in later experimentation by Tanaka<sup>4</sup> and Ilavský,<sup>5</sup> and today the phenomenon of gel collapse is well-accepted and documented. It was fitting for Karel Dušek to serve as the editor of two recent volumes of *Advances in Polymer Science* that deal with the present state of the subject.<sup>6</sup> He was himself involved in a very recent direct experimental observation of the two-swollen-network phase boundary.<sup>7</sup>

For many years Karel found great private support in his closely knit little family consisting of his wife, Dr. Dagmar Dušková, and their daughter, Jana. It was a great tragedy when Dagmar did not survive a fatal traffic accident, and that at a time when the fate of her people, under which she suffered so greatly, had not yet been changed. Ever since, science has had to mean even more for Karel than before.

Those who have had the privilege to collaborate with him invariably found it an inspiration and think back to it and to him with gratitude. All friends and colleagues express their warm feelings of sympathy and admiration for a unique scientist and warm person, and hope for a long continuation of scientific creativity and personal friendship.

## References and Notes

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