

Editorial

“Structure and dynamics of complex polymeric materials”
commemorating Tadeusz Pakula (1945–2005)

This special issue presents 17 papers dedicated to the memory of Tadeusz Pakula, who passed away on June 7, 2005. The papers are focused on the structure and dynamics of complex polymeric materials. Many new materials have been recently developed in which a controlled molecular architecture leads to self-organization of molecules to various complex structures. Structural studies of such systems and their correlations with macroscopic properties require application of various experimental methods which cover large range of size scale. Dynamic phenomena in these systems extend over a broad time range. X-ray scattering techniques and relaxation spectroscopy methods are the most often applied experimental tools. These experimental techniques are complemented by computer simulations and theoretical models to gain better insight into the structure and relaxation processes in the complex polymeric nanostructures.

Tadeusz Pakula was one of the key scientists in the field of complex polymeric materials. Tadeusz Pakula studied physics at the University of Lodz in Poland. He got his Ph.D. in chemistry in 1976 and received his “Habilitation” in 1984 at the Technical University of Lodz. He was employed in the Physics Department of the Technical University in Lodz (1967–1973) and at the Center of Molecular and Macromolecular Studies of the Polish Academy of Sciences in Lodz (1974–1984). He stayed as a postdoctoral fellow in the Institute for Physical Chemistry at the University of Mainz with Prof. E.W. Fischer (1977–1978) and in the Chemistry Department of Kyoto University with Prof. H. Kawai and Prof. T. Hashimoto (1982–1983). Since 1984, he was at the Max Planck Institute for Polymer Research as the head of the laboratory for testing mechanical properties of polymers. He also held the title of Professor at Lodz Polytechnic since 1995, where he taught polymer physics and supervised several students.

Tadeusz Pakula’s main scientific activity was in the correlation between macroscopic properties of complex materials and their structure and dynamics on microscopic length scales.

To establish such relationship he applied various experimental techniques such as dielectric and mechanical spectroscopy and X-ray diffraction. To get further insight into the kinetics of structural relaxation processes of densely packed materials, he developed an original computer simulation method, the cooperative motion algorithm. Tadeusz Pakula is a co-author of more than 250 papers. His scientific achievements were immense and he was recognized as an internationally outstanding researcher. Despite this success, he remained a modest person, but with his own critical opinion, who talked about science with a real passion.

Tadeusz Pakula extensively collaborated with chemists, physicists and theoreticians from many countries. Papers presented in this special issue present state of art in the area of structure and dynamics of complex polymeric materials. Tadeusz Pakula very actively contributed to many fields of polymer and materials science and several papers in this issue carry his name.

To many of us, Tadeusz Pakula was not only an excellent scientist and an extraordinary collaborator, but also a very reliable friend, always ready to generously help and share his time with colleagues. He passed away, leaving behind his lovely wife Anna and his son Jakub, who missed him even more than the entire polymer community.

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Available online 24 July 2006