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Introduction—Polymer physics section

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The Polymer physics section of *The Journal of Thermal Analysis and Calorimetry* is a 'forum' for reports on the theoretical and experimental investigations presenting the important role of thermal analysis and calorimetry in Polymer physics. Owing to the rapidly growing number of papers dealing with polymer science in a general sense, *JTAC* proposes to separate this rather narrow, but specific field of physics from polymer science.

The section will publish full-length papers describing advances in the understanding of the supermolecular structure varieties and the phenomena occurring in a polymer system. Invited reviews, calling the attention of scientists to interesting unresolved problems of polymer physics, and short personal opinions on these reviews will be considered for publication in the *Journal*. The main criteria of acceptance will be the physical content of the research and its relevance to polymer systems. The DSC results (only raw curves) must be supported by the original base line, which should cover the temperature range of the curves presented. Moreover, the authors should precisely describe methodology and which instrument was used.

Aims and scope

The major aim of the *Section* is to focus on the relations between the theory and the experiment, the supermolecular structure and the physical properties. This comprises experimental investigations, computational physics and theoretical studies. The *Section* especially welcomes papers which use the applied techniques to study polymer systems in an innovative way as well as research aimed at providing a better understanding of the physical phenomena, characteristic for polymers (synthetic or natural).

The key aspects covered by the section are the following:

- Structural heterogeneity of the amorphous phase in semi-crystalline polymers (keywords: *structural heterogeneity*, *three-phase model*, *morphology*);
- Definition of the glass transition temperature and its determination; correlation between different techniques (keywords: *glass transition*, *vitrification*, *glassy state*);
- Free volume dependence of polymer dynamics (keywords: *free volume*, *thermal expansion*, *hole size distribution*);
- Configurational entropy; importance of the accuracy of carrying out and interpreting measurements (keywords: *configurational entropy*, *heat-flux, power-compensation*);
- Relaxation dynamics of glass-forming polymers; relaxation time (keywords: *relaxation time*, *structural relaxation*, *local relaxation*, *crossover region*);
- Model simulations—a comparison between theory and real polymeric systems, with special attention to glassy state and glass transition (keywords: *molecular simulation*, *statistical thermodynamics*, *theoretical model*).

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