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Definition of Terms Related to Polymer Blends, Composites, and Multiphase Polymeric Materials (IUPAC Recommendations 2004)

W.J. Work, K. Horie, M. Hess, and R.F.T. Stepto

Pure and Applied Chemistry

Vol. 76, No. 11, pp. 1985–2007 (2004)

This document defines the terms most commonly encountered in the field of polymer blends and composites. The scope has been limited to mixtures in which the components differ in chemical composition or molar mass and in which the continuous phase is polymeric. Incidental thermodynamic descriptions are mainly limited to binary mixtures although, in principle, they could be generalized to multicomponent mixtures.

The document is organized into three sections. The first defines terms basic to the description of polymer mixtures. The second defines terms commonly encountered in descriptions of phase domain behavior of polymer mixtures. The third defines terms commonly encountered in the descriptions of the morphologies of phase-separated polymer mixtures.

www.iupac.org/publications/pac/2004/7611/7611x1985.html

Characterization of Polyamides 6, 11, and 12. Determination of Molecular Weight by Size Exclusion Chromatography (IUPAC Technical Report)

E.C. Robert, et al.

Pure and Applied Chemistry

Vol. 76, No. 11, pp. 2009–2025 (2004)

This report presents the results from IUPAC Working Party IV.2.2 of the global trial within the framework of IUPAC Commission IV.2, "Characterization of Commercial Polymers." The results were compared on the basis of molecular weight obtained by size exclusion chromatography (SEC) using different techniques practiced in participating laboratories, the majority of which were materials suppliers. The practical methodologies used different solvents for the polymers, in particular, benzyl alcohol, 1,1,1,3,3,3 hexafluoropropan-2-ol and tetrahydrofuran; the latter solvent was used after chemical modification of the polyamides, in general with trifluoroacetic anhydride. Eight laboratories participated in the trial. The repeatability for molecular weight in each laboratory was good, whatever technique was used, the relative standard deviation averaged over all laboratories was around 3%. The

New Online Submission and Peer Review System for *PAC*

During 2004, an online submission and peer-review system was implemented for *Pure and Applied Chemistry*. The new Web-based workflow for manuscript handling will enable Scientific Editor James R. Bull to implement peer review of manuscripts from IUPAC-sponsored conferences, which was formerly a discretionary option of the conference organizers. The system also provides support to John W. Lorimer and Bernado J. Herold, editors of IUPAC Recommendations and Technical Reports and respectively chairman and secretary of the Interdivisional Committee on Terminology, Nomenclature and Symbols .

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For *PAC*, the system was configured to work on invitation only. Authors of conference papers or technical reports are invited to review the instructions for authors and—if it applies—request an invitation to submit manuscripts online <www.iupac.org/publications/authors/instructions.html>.

Questions or comments may be sent by e-mail to <edit.pac@iupac.org>.

deviations in distribution of molecular weights with different experimental methodologies were broader, but were reasonably good despite the diversity of methods. The differences in the distribution correspond to a confidence interval of about 30% in molecular weight.

www.iupac.org/publications/pac/2004/7611/7611x2009.html

Rheological Properties and Associated Structural Characteristics of Some Aromatic Polycondensates Including Liquid-Crystalline Polyesters and Cellulose Derivatives (IUPAC Technical Report)

J.L. White, L. Dong, P. Han, and M. Laun
Pure and Applied Chemistry
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Aromatic polycondensates became increasingly important in the 1980s. Characteristic of these polymers are para-linked aromatic rings in their backbones, which tend to make the chains more rigid than aliphatic hydrocarbon (e.g., vinyl) polymers. While such *p*-linked aromatic polycondensates like poly(carbonate) or poly(ethylene terephthalate) had been known since the 1950s, the full implications were only realized in the 1970s with the discovery that concentrated solutions of poly(*p*-phenylene terephthalamide), poly(*p*-benzamide), and similar polymers exhibited rest state birefringence, liquid-crystalline phases, and associated viscosity reductions. This paper describes a comparative experimental study of shear-flow rheological properties of thermotropic polymer liquid crystals by eight different laboratories. The materials involved four different liquid-crystalline polyesters (LCPs), a glass- fiber-filled liquid-crystalline polyester, hydroxypropyl cellulose (HPC), and two non-liquid-crystalline high-temperature polymers, a poly(etheretherketone) (PEEK), and a polyarylate (PAR). Studies were made in both steady shear-flow and dynamic oscillatory experiments. The data from the various laboratories involved were compared. The level of agreement in the data was much less for most liquid-crystalline polymers than for similar isotropic melts. The Cox-Merz rule is valid for PEEK and PAR, but not for the LCPs and HPC. The occurrence of low levels of extrudate swell and high levels of uniaxial orientation in extrudates of the LCPs and HPC is described.

www.iupac.org/publications/pac/2004/7611/7611x2027.html

Name and Symbol of the Element with Atomic Number 111 (IUPAC Recommendations 2004)

J. Corish and G.M. Rosenblatt
Pure and Applied Chemistry
Vol. 76, No. 12, pp. 2101-2103 (2004)

A joint IUPAC-IUPAP Working Party (JWP) confirmed the discovery of element number 111. In accord with IUPAC procedures, the discoverers proposed a name and symbol for the element. The Inorganic Chemistry Division recommended this proposal for acceptance, and it was adopted by IUPAC on 1 November 2004. The recommended name is **roentgenium** with symbol **Rg**.

www.iupac.org/publications/pac/2004/7612/7612x2101.html

Chemical Actinometry (IUPAC Technical Report)

H.J. Kuhn, S.E. Braslavsky, and R. Schmidt
Pure and Applied Chemistry
Vol. 76, No. 12, pp. 2105-2146 (2004)

This document updates the first version of the IUPAC technical report on “Chemical Actinometers” published in *Pure and Applied Chemistry*, 61, 187–210 (1989). Since then, some methods have been improved, procedures have been modified, and new substances have been proposed as chemical actinometers. An actinometer is a chemical system or a physical device by which the number of photons in a beam absorbed into the defined space of a chemical reactor can be determined integrally or per time. This compilation includes chemical actinometers for the gas, solid, microheterogeneous, and liquid phases, as well as for use with pulsed lasers for the measurement of transient absorbances, including the quantum yield of phototransformation. The literature for each of the actinometers is included as well. The actinometers listed are for use in the wave-