the inherent numbering of the simplified skeleton and the seniority of the rings and ring systems in the phane parent hydride. The locants within the parentheses specify the atoms of the ring structure specified by the amplification prefixes that are linked to the adjacent normal atoms of the simplified parent skeleton.

In addition to the basic principles, rules and conventions of Phane Nomenclature, Part I [*Pure Appl. Chem.* 70(8), 1513-1545 (1998)] contains the fundamental methodology for numbering phane parent hydrides and the application of skeletal replacement (“a”) nomenclature for naming heterophane parent hydrides.

Part II of Phane Nomenclature describes derivatives of phane systems formed by substitutive nomenclature. The following nomenclatural features are described: indicated and added hydrogen, order of seniority for numbering, substituents expressed as suffixes, substituents cited as prefixes, phane parent hydrides modified by addition or subtraction of hydrogen atoms, and polyfunctional derivatives.

www.iupac.org/publications/pac/2002/7405/
7405x0809.html

Harmonized Guidelines for Single-Laboratory Validation of Methods of Analysis (IUPAC Technical Report)

by M. Thompson, S. L. R. Ellison, and R.Wood
Pure and Applied Chemistry, Vol. 74, No. 5, pp. 835-855 (2002)

Method validation is one of the measures universally recognized as a necessary part of a comprehensive system of quality assurance in analytical chemistry. In the past, ISO, IUPAC, and AOAC International have cooperated to produce agreed protocols or guidelines on the “design, conduct and interpretation of method performance studies,” on the “Proficiency testing of (chemical) analytical laboratories,” on “internal quality control in analytical chemistry laboratories,” and on “the use of recovery information in analytical measurement.” The Working Group that produced these protocols/guidelines has now been mandated by IUPAC to prepare guidelines on the single-laboratory validation of methods of analysis. These guidelines provide minimum recommendations on procedures that should be employed to ensure adequate validation of analytical methods. A draft of the guidelines has been discussed at an International Symposium on the Harmonization of Quality Assurance Systems in Chemical Laboratory, the proceedings from which have been published by the UK Royal Society of Chemistry.

www.iupac.org/publications/pac/2002/7405/
7405x0835.html

Polyaniline. Preparation of a Conducting Polymer (IUPAC Technical Report)

by J. Stejskal and R. G. Gilbert
Pure and Applied Chemistry, Vol. 74, No. 5, pp. 857-867 (2002)

Eight persons from five institutions in different countries carried out polymerizations of aniline following the same preparation protocol. In a “standard” procedure, aniline hydrochloride was oxidized with ammonium peroxydisulfate in aqueous medium at ambient temperature. The yield of polyaniline was higher than 90% in all cases. The electrical conductivity of polyaniline hydrochloride thus prepared was 4.4 ± 1.7 S cm^{-1} (average of 59 samples), measured at room temperature. A product with defined electrical properties could be obtained in various laboratories by following the same synthetic procedure. The influence of reduced reaction temperature and increased acidity of the polymerization medium on polyaniline conductivity were also addressed. The conductivity changes occurring during the storage of polyaniline were monitored. The density of polyaniline hydrochloride was 1.329 g cm^{-3}. The average conductivity of corresponding polyaniline bases was 1.4×10^{8} S cm^{-1}, the density being 1.245 g cm^{-1}. Additional changes in the conductivity take place during storage. Aging is more pronounced in powders than in compressed samples. As far as aging effects are concerned, their assessment is relative. The observed reduction in the conductivity by ~10% after more than one-year storage is large but, compared with the low conductivity of corresponding polyaniline (PANI) base, such a change is negligible. For most applications, an acceptable level of conductivity may be maintained throughout the expected lifetime.

www.iupac.org/publications/pac/2002/7405/
7405x0869.html

Studies on Biodegradable Poly[hexano-6-lactone] Fibers. Part 3. Enzymatic Degradation in Vitro (IUPAC Technical Report)

by T. Hayashi, K. Nakayama, M. Mochizuki, and T. Masuda
Pure and Applied Chemistry, Vol. 74, No. 5, pp. 869-880 (2002)

This report describes how poly(hexano-6-lactone) (PCL) fibers were enzymatically degraded by a hydrolase in vitro. The extent of degradation of PCL fibers was examined by weight loss, mechanical properties loss such as tensile strength and ultimate elongation decreases, and visual observations by scanning electron microscopy. The in vitro degradation of PCL fibers was carried out using a lipoprotein lipase (Lipase-PS) as a hydrolase. The kinetic study on the weight loss of PCL fiber accompanying the enzymatic degradation suggested that the degradation of PCL fibers gradually takes place from the surface, not bulk degradation. The rate of degradation was found to depend on draw ratio and crystallinity of the PCL fibers. The strength loss of PCL fibers in the course of degradation took place faster than the weight loss of PCL fibers. Sonic velocity measurements as well as dynamic mechanical properties of PCL fibers were also examined as a function of weight loss of sample fibers with Lipase-PS treatments. It was shown that sonic velocity and value of loss tangent δ changed steeply for undrawn PCL fiber in the first step with enzymatic digestion.

www.iupac.org/publications/pac/2002/7405/
7405x0869.html

New Books and Publications

Free-Radical Polymerization: Kinetics and Mechanism

M. Buback and A. L. German, editors
Macromolecular Symposium, Vol. 182, pp. 1-303, 2002.
Wiley-VCH, 2002, ISBN 3-527-30472-x

Nowadays, many polymerization processes of commercial interest are based on the free-radical principle. The free-radical process is often preferred over other methods of preparation as it is rather robust and less sensitive to trace amounts of impurities. However, until the late 1980s the prevailing opinion was that free-radical polymerization was a mature technique, unable to afford polymers with well-defined structures, and lacking the ability to yield narrow molecular weight distributions and block copolymers.

In 1985, a small group of chemists discussed the possibility of holding a meeting devoted to radical polymerization. Chemists Ken O’Driscoll and Saverio Russo organized such a conference (SML-87) in Santa Margherita Ligure, Italy, in May 1987. It was a great success, demonstrating that there was indeed a renaissance in the radical polymerization field, and it catalyzed an even stronger resurgence immediately afterwards.

In May 1996 the second conference (SML-96) of the same title was held, again in Santa Margherita Ligure, and again arranged by O’Driscoll and Russo. The IUPAC-Sponsored “International Symposium on Free-Radical Polymerization: Kinetics and Mechanism” (SML’01), held in June 2001 in Ciocco, Tuscany, was the third conference in the series, and continued the tradition of holding these meetings in Italy.

SML’01 was attended by 235 scientists from 25 countries, with a good balance between attendees from industry and academia. It is also noteworthy that quite a large number of Ph.D. students, mostly from European countries, attended and actively participated in the scientific program.

During the five-day program, 23 invited main lectures, 11 contributed papers, and 135 posters were presented. Most of the main lectures and some of the short lectures are in this issue of *Macromolecular Symposia*.

The symposium comprised six major themes:

- Fundamentals of Free-Radical Polymerization
- Free-Radical Polymerization in Supercritical Fluids
- Polymer Characterization
- Polymer Reaction Engineering
- Controlled Radical Polymerization
- Polymerization in Heterogeneous Systems

In looking back, it is striking that not a single paper at SML-87 dealt with “living radicals” (in the current sense of the term), Atom Transfer Radical Polymerization or Reversible Addition Fragmentation Chain. At the second meeting, SML-96, these topics were addressed in only a small number of papers. But at SML’0l, they dominated large sections of the program.

Through this series of three conferences, important lines of development become clearly visible:

- Our knowledge of the basic kinetics and mechanisms of free-radical polymerization has increased tremendously over the past years, due to the advent of new powerful experimental techniques like pulsed laser polymerization and advanced mass spectrometry.
- The explanations of anomalies in traditional radical polymerization kinetics have been couched in terms that have tended partially to shift from termination towards propagation.
- The overwhelming progress in the area of “Controlled (or Living) Radical Polymerization” (CRP), has created a more definable link between polymerization conditions and polymer (micro) structure.
- Hand in hand with the rapid developments in the chemistry of CRP and in the understanding of its kinetics and mechanisms, increasing attention is