structured with a built-in concentrated Li_2SO_4 salt bridge for use as a sulfate-based reference electrode. Li_2SO_4 also has favorable properties as a salt bridge in some mixed aqueous-organic solvents, e.g., acetonitrile-water mixtures, and its combination with the lead-amalgam|lead-sulfate electrode in such solvents is an interesting perspective, for which further accumulation of data is awaited. This electrode can be operated as a reference electrode alternative to the conventional calomel or Ag|AgCl reference electrodes in electroanalytical practice.

www.iupac.org/publications/pac/2002/7404/7404x0593.html

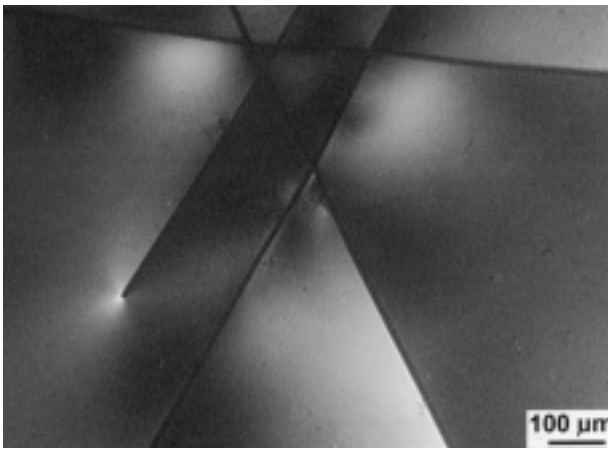
Future Requirements In the Characterization of Continuous Fiber Reinforced Polymeric Composites (IUPAC Technical Report)

by D. R. Moore and A. Cervenka
Pure and Applied Chemistry, Vol. 74, No. 4, pp. 601-628 (2002)

There has been enormous activity in the field of continuous fiber reinforced polymeric composites research, particularly in the period between 1980 and the present. Although there has also been a decline in this activity in the last few years, nevertheless, there is likely to be future expansion for these materials in a range of areas, most of which will be motivated by a specific property per unit weight. Consequently, characterization of composites is likely to remain a key issue.

Much of the historic activity on characterization has been associated with processing, properties, and structure. In addition, there remains plenty yet to explore. A number of the scientists associated with the historic activities are active on the IUPAC Working Party on Structure and Properties of Commercial Polymers, under the chairmanship of Martin Laun. Therefore, this group has considered what activities might be required in the future in order to better characterize continuous fiber reinforced composites and in addition to contemplate some current and future issues.

This report examines the characterization of continuous fiber reinforced composites in terms of processing, properties, and structure. The historic background of five processing and five property topics are then reviewed with the aim of identifying current issues and requirements for the future. The topics covered in the processing section are polymeric matrix, impregnation, interfacial effects, residual stresses, and pre-preg tack. In the mechanical properties section the topics include choice of standard, recycling and re-usability, durability, environmental strength, and toughness. The paper provides a 10-point plan for future requirements.



An example of a complicated stress field illustrated by a photoelastic image of an assembly of long carbon fibers embedded in Araldite epoxy matrix.

In common with this IUPAC Working Party's activities, the contributions for this work come from a wide international group of scientists from both industry and academia and include C. B. Bucknall (UK), R. S. Bailey (UK), B. Pukansky (Hungary), A. Galeski (Poland), D. R. Moore (UK), L. Glas (Belgium), W. Alstadt (Germany), B. Gunesin (Turkey), A. Cervenka (Holland), and J. G. Williams (UK).

www.iupac.org/publications/pac/2002/7404/7404x0601.html

Nomenclature for the C_{60}-I_h and C_{70}-$D_{5h(6)}$ Fullerenes (IUPAC Recommendations 2002)

by W. H. Powell, F. Cozzi, G. P. Moss, C. Thilgen, R. J.-R. Hwu, and A. Yerin
Pure and Applied Chemistry, Vol. 74, No. 4, pp. 629-695 (2002)

Fullerenes are a new allotrope of carbon characterized by a closed-cage structure consisting of an even number of three-coordinate carbon atoms devoid of hydrogen atoms. This class was originally limited to closed-cage structures with 12 isolated five-membered rings, the rest being six-membered rings.

Although it was recognized that existing organic ring nomenclature could be used for these structures, the resulting names would be extremely unwieldy and inconvenient for use. Incorrect von Baeyer ring names have been published. At the same time it was also recognized that established organic nomenclature principles could be used, or adapted, to provide a consistent nomenclature for this unique class of compounds based on the class name fullerene. However, it was necessary to develop an entirely new method for uniquely numbering closed-cage systems.