

Obituary

Michael John Richardson



It is with great sadness that we report the death of Mike Richardson at the age of 69 on 3 November 2004. Mike was one of the true pioneers of thermal analysis especially in the use of DSC to derive reliable measurements of thermodynamic and other properties.

Mike was born near Hull in the East Riding of Yorkshire and obtained a First-class Honours Degree in Chemistry at the University of Manchester and stayed in this department to obtain a Ph.D. under the supervision of Prof. John Rowlinson on the solubility of mercury in compressed gases. He then moved to the Mellon Institute in Pittsburgh, PA, USA, to work with Paul Flory. There he contributed to studies of the modulus of semi-crystalline polymers, which were regarded as rubber elastic networks effectively crosslinked by the crystals. Polymers were his main interest for the rest of his career. He then worked on the electron microscopy of polymers at the Cavendish Laboratory at the University of Cambridge, UK, before joining The Basic Physics Group at the National Physical Laboratory (NPL), Teddington, UK, in 1963 where he remained until he retired in 1994. Following his retirement he continued with his research interests at the Polymer Research Centre at the University of Surrey, Guildford, UK.

Ironically, his long association with differential scanning calorimetry started with his quest to show it did not produce reliable values. He had measured the melting behaviour and surface energies of polyethylene single crystals using adiabatic calorimetry and was about to publish when the results on the melting of polyethylene obtained by DSC were reported. He purchased a Perkin-Elmer DSC and found that the results were very dependent upon differences in the baseline on heating between the initial and final temperatures and on the heating rate. He realised that the DSC had huge advantages over conventional calorimetry, such as speed of measurement and sample size (which was both an order of magnitude smaller than in adiabatic techniques) and so he set out to make DSC more quantitative. He devised methods and related software to eliminate the baseline problem. Using this he obtained heat capacity measurements within 1% of recommended values. He improved the DSC further by (1) accounting for the thermal lag, and (2) extending its temperature to 1200 K (but simultaneously reducing the lifetime of the instrument!). Using the improved DSC, he demonstrated that the glass transition and the structural relaxation of metastable glasses could be rigorously explored with DSC. He was dedicated to his research and even when he was moved to administrative duties at NPL, he managed to keep his research going by sneaking off to his laboratory at frequent intervals.

Polymers were always his main interest as witnessed by his classic work showing that the definitive way to measure glass transition in polymers was through enthalpy measurements. However, throughout his career he saw the potential of DSC to derive accurate values of C_p and enthalpies of many different materials, metals, alloys, slags, glasses, fluxes, and refractories. In the last years of his career he was active in the European Virtual Institute for Thermal Metrology (EVITHERM) project.

The importance of his work in the quantification of DSC was recognised by the award of the Netzsch-GEFTA Prize in 1994 and with the dedication of a special issue of *Thermochimica Acta* in 2002 to Mike and Prof GWH Höhne entitled “Calorimetry and More”. He served as Chairman of the IUPAC Working Group “Thermal Properties of Polymers”

(1987–1993) and as Chairman of the ICTAC Committee on Standardisation from 1992 to the time of his death. He also served as Treasurer of the UK Thermal Methods Group and as Secretary of the UK Polymer Physics Group for many years, and was an Editorial Board Member of *Thermochimica Acta*. He helped and encouraged many young scientists during his career, all of whom were attracted by his relaxed and unassuming manner.

In 1998, Mike was involved in the IUPAC Project “Standards, Calibration and Guidelines in Microcalorimetry”. He made a fundamental contribution to the preparation of its Part 2 “Calibration Standards for Differential Scanning Calorimetry”, which was finalised ready for publication just before his death. In this context, he contributed to the organisation of the “International Workshop on the Calibration of Calorimeters”, Turin (Italy), March 19–22, 1998, and was co-editor

of the Special Issue of *Thermochimica Acta* “Calibration of Calorimeters”.

He will be sorely missed not only for his scientific contributions but also for his delightful personality. He had a sunny and calm persona and will be remembered for his wonderful, understated wit. He brought many a smile to his friends’ lips and always made the world seem a better place. His death is mourned by his wife Jan, his children, David and Susan, his four grandchildren and his many friends and colleagues.

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