



Preface to the Robert (Robin) H. Stokes Festschrift

It is a great pleasure to introduce the first Festschrift issue of the *Journal of Chemical and Engineering Data* in honor of Emeritus Professor Robert (Robin) Harold Stokes of the University of New England, Armidale, NSW, Australia, on the occasion of his 90th birthday (24 December 2008). The Festschrift contains 80 manuscripts, a tribute to his continuing influence. The Journal wishes him a belated happy birthday.

There can be few researchers in the field of solution chemistry who have not opened the book "Electrolyte Solutions", first published in 1955 with Robert (Robbie) A. Robinson. It has remained a classic in its field and was revised twice (1959, 1965) and reprinted by Courier Dover Publications in 2002. It was a Science Citation Index citation classic in 1988. The book describes in detail the measurement of both the thermodynamic and transport properties of electrolyte solutions with many of the experimental methods still commonly in use. In addition, the text provided a comprehensive set of tables of evaluated data or equations for osmotic coefficients and activity coefficients, diffusion coefficients, electrolytic conductivity and viscosity of aqueous electrolytes, and dissociation constants of acids and bases. The book also included an extensive theoretical interpretation of thermodynamic and transport properties of aqueous and nonaqueous electrolyte solutions, much still valid today.

Robin Stokes was born in Southsea, England. The family had no connection with the town except that Robin's mother was waiting for his father, John Whitley Gabriel Stokes, a Cambridge educated civil engineer, to be demobilized from the army. The Stokes family includes Sir George Gabriel Stokes, the noted physicist and President of the Royal Society, and the Irish physician William Stokes, Regius Professor at the University of Dublin. The Stokes history traces back to an Anglo-Irish family of the Cromwell era. His mother's father and grandfather were industrial chemists.

At an early age, Robin's family moved to Murchison, an isolated town in the South Island of New Zealand, where he attended primary school. Fortunately, they left for Nelson at the top of the South Island in 1926, the year before the great earthquake that destroyed most of Murchison. The family later moved to Auckland where Robin had his secondary education at Auckland Grammar School and attended Auckland University College, graduating with BSc in 1938 and MSc (Hons) in 1939 (with Robbie Robinson as his supervisor), and was awarded

the 1851 Exhibition Scholarship which could not be taken up because of World War II. His initial research included electromotive force and isopiestic measurements on metal halides. During the war, Robin worked in a munitions factory but continued research, with particular emphasis on concentrated electrolytes. In 1942 he married Jean Wilson, a collaborator since 1940, and in 1946 accepted an appointment at the University of Western Australia. There he continued his studies on concentrated electrolytes and with Robinson championed the concept of ionic hydration in concentrated aqueous electrolyte solutions, at that stage considered unfashionable. In 1948, with the award of an ICI Fellowship, Robin undertook PhD studies at Cambridge University where he developed the magnetically stirred diaphragm cell technique for the measurement of diffusion coefficients in aqueous electrolytes. The technique has since been widely used for the measurement of tracer- and self-diffusion coefficients using isotopic tracers and for diffusion measurements at high temperature and pressure.

In 1950, Robin returned to the Chemistry Department, University of Western Australia, as a Senior Lecturer then Reader. There, in collaboration with a number of graduate students, he continued with isopiestic and diaphragm cell measurements, as well as constructing a Gouy diffusometer, and started a series of very accurate measurements of the conductivity of concentrated electrolytes as well as the measurement of transport numbers. Between 1954 and 1955 the book entitled "Electrolyte Solutions" was written in collaboration with Robbie Robinson, then the foundation Professor of Chemistry at the then University of Malaysia in Singapore.

In late 1955 with his appointment as Foundation Professor of Chemistry, University of New England, Armidale, NSW Australia, Robin negotiated a visiting Reader position to be used to invite prominent physical chemists for periods up to one year. From 1956 to 1978, Armidale was regarded as a premier center for studies on the thermodynamic and transport properties of electrolytes and nonelectrolytes with long-term visitors including John Agar, John Prue, Robbie Robinson, Loren Hepler, Dick Bearman, Robert Scott, Bevan Ott, and Rubin Battino and short-term visitors including John Rowlinson, Max McGlashan, Arthur Williamson, and Fritz Kohler. I joined the group in 1961 after completing Honors at the University of Melbourne with Michael Spiro who moved to Imperial College of Science and Technology, London, in late 1960. That period in Armidale was an exciting and intellectually invigorating time. From the mid-1960s, Robin's attention moved to nonelectrolyte solutions where, with my collaboration, new techniques were developed for the measurement of enthalpies of mixing, excess volumes, vapor-liquid equilibria, liquid compressibility, and dielectric constants. In particular, his numerous publications on the interactions of alcohols with aliphatic and aromatic hydrocarbons, where he combined thermodynamic, spectroscopic, and dielectric measurements, provided a comprehensive explanation that was groundbreaking but overlooked in recent times. Robin retired in 1979 but remained active, continuing to publish until 1990 and, unknown to many, remaining an active reviewer for this Journal until 2007. Robin's wife Jean provided unflinching support throughout his career and was an active collaborator until 1965. She died in 2003. They had three daughters, Helen, Anne, and Jenny, and Jenny has four children.

Robin Stokes is a Fellow of the Australian Academy of Science (F.A.A.), Fellow of the Royal Society of Chemistry (F.R.S.C.), and Fellow of the Royal Australian Chemical Institute (F.R.A.C.I.). He has been awarded the following: 1940, Sir George Fowlds Medal, Auckland University College; 1946, Rennie Medal, Australian Chemical Institute; 1946, Meldola Medal, Institute of Chemistry; 1953, H.G. Smith Medal, Australian Chemical Institute; 1977, Queen's Jubilee Medal; 1980, R.H. Stokes Medal, Electrochemistry Division, Royal Australian Chemical Institute (Inaugural award); 1981, R.A. Robinson Memorial Medal, Faraday Division, Royal Society of Chemistry (Inaugural award).

As well as "Electrolyte Solutions", Robin has authored/coauthored 130 papers and two books, "Viscosity of Electrolytes and Related Properties" with Reginald Mills (1965) and "Equilibrium Properties of Aqueous Solutions of Single Strong Electrolytes" with E.A. Guggenheim (1969). In addition, he has authored/coauthored six chapters in books and six substantial reviews on electrolytes and nonelectrolyte solutions.

I would like to close on a personal note by acknowledging the extraordinary influence Robin Stokes has had on my career, initially as a MSc, and then as a PhD student under his supervision, then as a colleague at the University of New England from 1966 to 1983, when he encouraged me to seek wider fields in the U.S.A. and elsewhere. Robin remains a relatively shy person but has an extraordinary sense of humor and wit.

I met my wife Barbara in Robin's laboratory while I was measuring the electrolytic conductance of sodium hydroxide and she was completing her Honors degree measuring the conductance of hydrochloric acid.

Kenneth N. Marsh, Editor