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Congratulations to Dr. Donald G. Miller on his 80th Birthday

Joseph A. Rard · John G. Albright

Dr. Donald G. Miller celebrates his 80th birthday on 29 October 2007. We congratulate our friend, colleague, and scientific collaborator on this happy occasion.

Don Miller received his B.S. in Chemistry at University of California (Berkeley) in 1949, and his Ph.D. in Physical Chemistry from the University of Illinois (Urbana) in 1952 under the mentorship of Prof. F.T. Wall. He was subsequently an Assistant Professor at the University of Louisville (1952–1954), a Research Associate at Brookhaven National Laboratory (1954–1956), and a Chemist at Lawrence Livermore National Laboratory (1956–1991). He retired in 1991 but has continued his productive scientific career since then as a Participating Guest at Lawrence Livermore National Laboratory (LLNL). At various times he has been a Fulbright Professor (Facultés Catholiques de Lille, France), Research Fellow (Australian National University, Canberra, Australia), Contract Professor (Università degli Studi di Napoli – Federico II, Italy), Guest Professor (Technische Hochschule, Aachen, Germany; Universitat de València, Spain), and Adjunct Professor (Texas Christian University, USA). He has also presented numerous invited lectures at conferences and symposia.

Don Miller's early research involved the thermodynamics of rubber, Boolean algebra, the spectroscopy of trivalent rare earth ions in aqueous and alcoholic solutions, and equations of state of gases. His interests soon shifted to the thermodynamics of linear irreversible processes (TLIP), early on recognizing that mutual diffusion coefficients for ternary solutions could be used as a sensitive test of the Onsager reciprocal relations (ORR). In a subsequent series of papers he analyzed the equations for linear irreversible thermodynamics as applied to specific processes, which led to three major and highly influential papers in which the TLIP equations for liquid solutions of electrolytes were exhaustively systematized and extended [1–3]. In two separate works [4, 5] he collected

and analyzed available evidence for the ORR. These major works generated a renewed interest in and stimulated much subsequent research in the TLIP.

Don Miller was the leading force in preserving Gosting's diffusiometer [6], the world's most accurate optical interferometer for liquid state diffusion coefficient measurements. He was instrumental in bringing this diffusiometer first to LLNL (1981–1991), see Fig. 2, and subsequently to its permanent home at Texas Christian University where it was operated under the supervision of John G. Albright (until his retirement) and subsequently by Onofrio Annunziata.

Figure 2 here

In addition to the scientific research and achievements described above, Don Miller has published in a very large number of different areas: experimental binary and multi-component solution diffusion coefficient measurements; experimental binary and multi-component solution osmotic coefficient measurements; experimental binary and multi-component solution density and partial molar volume measurements; experimental transference number and electrical conductivity measurements; calculation of Onsager transport coefficients, velocity correlation coefficients, and distinct diffusion coefficients; comparison of binary-solution-based mixing rules for thermodynamic and transport properties using different composition scales; convective (gravitational) instabilities resulting from multi-component diffusion; extending methods for analyzing Rayleigh and Gouy interferometric diffusion data to higher-order mixtures; basing multicomponent diffusion on TLIP and comparing different reference frames for describing diffusion and transport processes; and the analysis of ballistics data and estimating rifling twist. In addition, he has published in the history of science, especially on the life and scientific achievements of Pierre Duhem and on Lars Onsager's role in the development of TLIP.

In addition to his scientific achievements, he was a member of the city council and is a former mayor of Livermore, California.

Don Miller has been happily married to Miriam (Cohen) for 58 years. They are the proud parents of two daughters, Nancy and Lynne, and have two grandchildren.

We wish Don Miller a happy birthday and a continued productive scientific career.

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Figure 1 Donald G. Miller (July 2007)

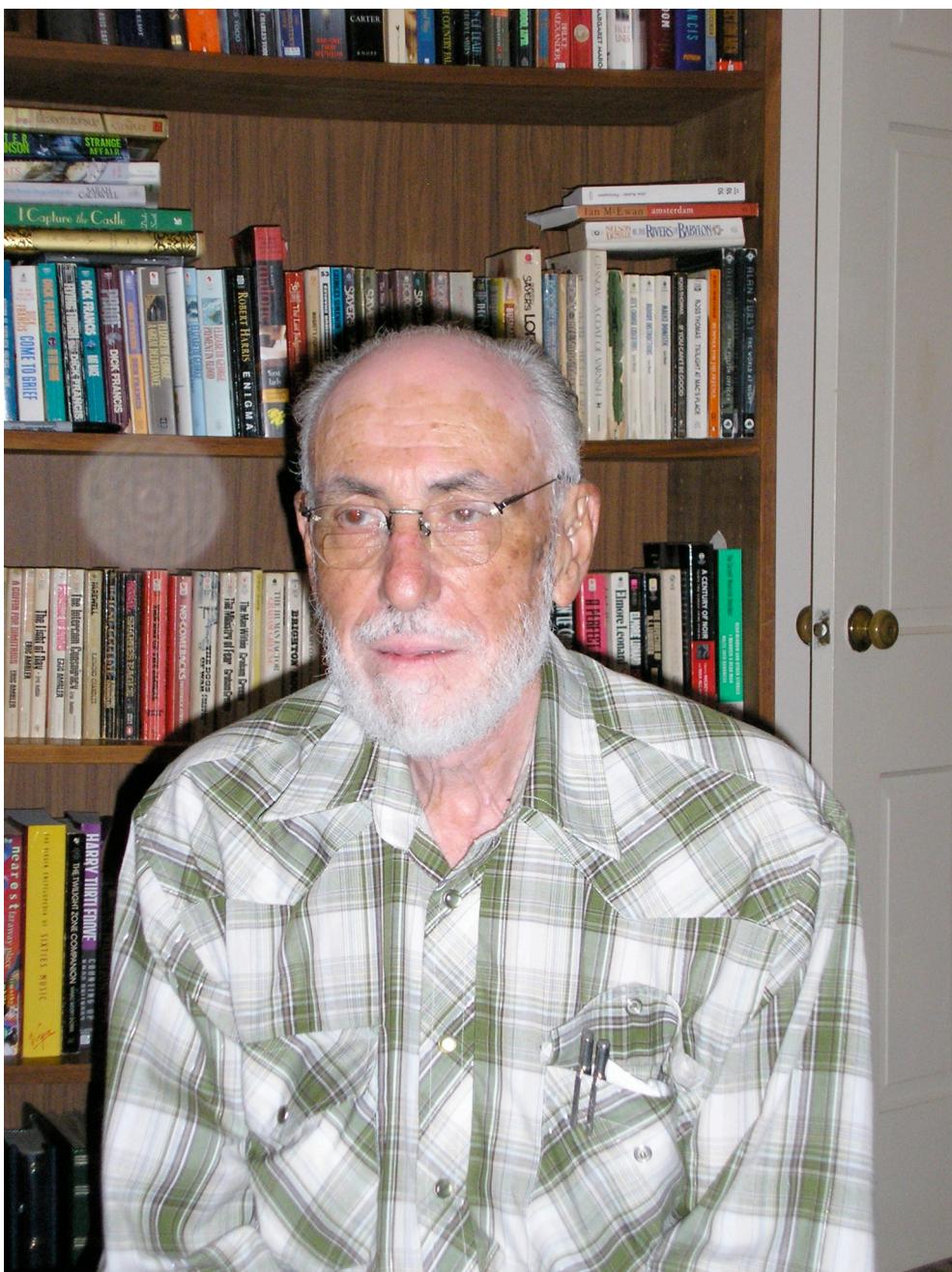


Figure 2 Gosting's diffusiometer. From left to right: Donald G. Miller, John G. Albright, Joseph A. Rard, Hyoungman Kim, and Gerson Kegeles. Gerson Kegeles was Louis Gosting's Ph.D. mentor who rescued the diffusiometer after Gosting's death and became its custodian. Hyoungman Kim, a postdoctoral research associate of Louis Gosting's at the time of Gosting's death, and John G. Albright were involved in the building and calibration of this diffusiometer. All of these scientists in this picture have been involved in the theoretical analysis and/or development of the experimental aspects of high-precision liquid state diffusion measurements. This photograph, taken by Diana Vallario, first appeared in the Livermore "Herald" in 1981 and is reproduced with permission.

