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In Memoriam Robert Simha (1912 - 2008)

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IN MEMORIAM

Robert Simha (1912–2008)

Professor Robert Simha passed away on June 5, 2008. His scientific output spans 73 years from 1936 to 2009 when a book on polymer physics, with two chapters co-authored by him, will be published. For many years he served on the Editorial Board, as an author and reviewer for this journal. A more complete biography will be published later—here a few notable highlights are mentioned.

Simha was born in Vienna, Austria on August 4, 1912. At the age of 23 he received a PhD in theoretical physics from the University of Vienna, and then spent three years as unpaid post doctoral fellow in Herman Mark's First Chemical Institute. His main task was the study of solution and suspension viscosity. Simha's theoretical work extended Einstein's treatment to Poiseuille flow, to higher concentrations, and to non-spherical ellipsoidal particles and culminated in the publication in 1952 of an equation valid over the full range of concentration. His interest in the viscosity of polymer solutions continued as evidenced by publications stretching until 1971 and the award of the Bingham Medal of the Society of Rheology in 1973. He made major contributions to the development of a general kinetic theory of chain degradation and copolymerization. In 1948, Robert's interests shifted toward the statistical thermodynamics of liquids, polymer melts and glasses, glass transition temperature, T_g , and the sub- T_g relaxations. Here the most significant development was the derivation of the cell-hole theory of liquids with Thomas Somcynsky in 1969. The theory for spherical and chain molecule liquids not only correctly describes the temperature and pressure effects on specific volume (PVT), but also that of the hole fraction, i.e., the free volume content. In the late 1970's the theory



**Thomas Somcynsky and Robert Simha,
October 17, 2007**

was expanded to binary systems—solutions, blends, composites, foams and nanocomposites. Cell-hole theory predictions with T and P have now been successfully applied by Simha and others to transport processes, physical aging and dynamics of volume relaxation. His more recent publications include the use of positronium annihilation lifetime spectroscopy (PALS) as an analytical technique for estimating the free volume in polymers. These achievements were recognized by the award of the Polymer Physics Prize of the American Physical Society in 1981.

Robert Simha remained an active and cherished member of the polymer physics community to the last day of his life. His keen insights and exceptional memory made him a valuable resource to students and colleagues alike.

I. OTTERNESS, L.A. UTRACKI, A.M. JAMIESON
Montreal, June 16, 2008