

BIOGRAPHICAL INFORMATION

ROBERT S. BRODKEY
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Professor Robert S. Brodkey received his B.S. in Chemistry in 1950 and his M.S. in Chemical Engineering also in 1950 from the University of California, Berkeley. At the University of Wisconsin, he received his Ph.D. in Chemical Engineering in 1952, doing a study in freeze drying. He spent 5 years with Standard Oil of New Jersey in their Esso Research and Engineering Company research facility. There he worked on diverse chemical and chemical engineering problems, including chemical synthesis (5 patents) and chemical process (5 patents). In 1957, he joined OSU as an Assistant Professor of Chemical Engineering, became Associate Professor in 1960, Professor in 1964 and Professor Emeritus in 1992.

His work has been primarily in the field of fluid mechanics with specialization in the areas of fundamental turbulent fluid flow (~40 publications), mixing (~25 publications), rheology (~15 publications), and two phase flow (~10 publications). Recently he has been involved in the application of image processing and analysis to problems in fluid mechanics (~10 publications). Some 30 additional publications, as well as textbooks and reviews, on a variety of fields have appeared in the literature. He is well known for his graduate text, *The Phenomena of Fluid Motions*, which was reprinted by Dover Publications in 1995. His undergraduate text, *Transport Phenomena: A Unified Approach*, (with H.C. Hershey) was published in 1988 by McGraw-Hill as part of their prestigious Chemical Engineering Series. The text has been translated into a two volume Greek edition.

Professor Brodkey received a "Senior U.S. Scientist Award" (1975) from the Alexander von Humboldt Foundation, a "Senior Fellowship in Science" (1972) from NATO, and the "Outstanding Paper of the Year Award" (1970) from the Canadian Society for Chemical Engineering. For the Fall of 1978, he received the Visiting Professorship award from the Japan Society for the Promotion of Science. He was selected to receive The Ohio State University's Distinguished Senior Research Award (1983) and a Senior Research Award (1983) from the College of Engineering of The Ohio State University. This latter award, which can be given every three years for work based on the preceding three years, was awarded again to Prof. Brodkey in 1986. During the summer of 1983 he was once again invited to visit Germany under the von Humboldt Senior U.S. Scientist Program. In 1985, he was awarded the Senior Research Award of the American Society of Engineering Education and elected a Fellow of the AIChE. In 1986, he received the Chemical Engineering Lectureship Award sponsored by 3M and given by ASEE. In 1987 he was elected a Fellow of the American Physical Society. He has also been made a fellow of the American Association for the Advancement of Science (1954) and of the American Institute of Chemists. In 1994, he held the W.W. Clyde Chair of Engineering at the University of Utah, received the 1994 North American Mixing Forum's award for Outstanding Research, and had two sessions at the San Francisco Annual AIChE meeting held in his honor for his 65th birthday. Another session on turbulence was held in his honor of his 70th birthday at the 1998 Annual AIChE meeting. In 2002, a symposium on "Turbulence in Chemical Processing" was held at USNCTAM-14 in his honor. Professor Brodkey is still active in research, teaching, and Departmental affairs, even though he has been appointed as an Emeritus Professor.

He is a member of a number of other honorary and professional societies such as Sigma Xi, AIChE, ACS, APS, AAM and AAAS and is listed in many of the standard biographical references. In addition, he has presented nearly 100 invited seminars and lectures at Universities and establishments in the U.S. and in 13 countries overseas. He has given about 50 lectures at industrial research centers. Professor Brodkey has acted as advisor to nearly 45 Ph.D. students, with one still active in his degree work. He has been advisor to over 40 M.S. students.

PUBLICATIONS

Books and Reviews

- Full-Field, Time-Resolved, Vector Measurements*, Chap. 8, in *Instrumentation for Fluid-Particle Flow*, ed. S.L. Soo, Noyes Pubs. (William Andrew Publishing) NY (1999), with Y. Zhao.
- The Phenomena of Fluid Motions* (730 pages) Dover Publications, Inc. (1995), originally published by Addison-Wesley Pub. Co., (1967).
- Transport Phenomena: A Unified Approach*, Mc-Graw Hill Book Co. (1988) with H.C. Hershey; Greek edition published (1990).
- Turbulence in Mixing Operations*, Ed. and Author of Chap. 2, Academic Press (1975).

Selected Papers Associated with Work (since 1998, selected from over 125)

- Y. Zhao, R.S. Brodkey and S. Nakamura, 2002, Study of 3D Mixing Processes by Numerical and Experimental Approaches, 2002 ASME Fluids Engineering Division Summer Meeting, July 14-18, Montreal, Quebec, Canada (FEDSM2002-311697).
- Zhao, Y. and R. S. Brodkey, 2000. On the Representation of Complex Turbulent Flows: Representations of Large Data Fields on the Internet. *Ind. Eng. Chem. Res.* **39**, 1743-1746.
- Haam, S.J., R.S. Brodkey, I. Fort, L. Klaboch, M. Placnik and V. Vanecek, 2000. Laser Doppler Anemometry Measurements in an Index of Refraction Matched Column in the Presence of Dispersed Beads, *Int. J. of Multi-Phase Flow*, **26**, 1401-1418.
- Haam, S.J. and R.S. Brodkey, 2000. Motions of Dispersed Beads Obtained by Particle Tracking Velocimetry Measurements. *Int. J. of Multi-Phase Flow*, **26**, 1419-1438.
- Nakamura, S. and R.S. Brodkey, 2000, Direct and Large Eddy Simulation of the Three-Dimensional Unsteady Flow in the Counter-Jet mixing Vessel, Proc. ASME Fluids Eng. Summer Conf. July 11-15, Boston (FEDSM2000-11007).
- Nakamura, S. and R.S. Brodkey, 2000, Computational Flow Analysis of the Chemical Mixing Vessel with Impeller and Baffles, Proc. ASME Fluids Eng. Summer Conf. July 11-15, Boston (FEDSM2000-11207).
- McCreery, G.E., K.G. Condie, D.M. McEligot, J.C. Crepeau, R. Clarksean, Y.G. Guezennec and R. S. Brodkey, 1999. Flow visualization and velocity measurements in a model fuel storage canister. Paper 124, Global '99, International Conf. on Future Nuclear Sys., Jackson, Wyo., August-September.
- Nakamura, S. and R.S. Brodkey, 1999. Computational and Experimental Study of the Fluid Flow in a Cylindrical Cavity with an Impeller Rotor at an Eccentric Location. *Proc. 3rd ASME/JSME Joint Fluids Conference*, FEDSM99-7193.

- Zhao, Y. and R.S. Brodkey, 1998. Averaged and Time-Resolved, Full-Field (Three-Dimensional), Measurements of Unsteady Opposed Jets, *Can. J. Chem. Engr.*, **76**, 536-545.
- Unger, D.R., F.J. Muzzio and R.S. Brodkey, 1998. Experimental and Numerical Characterization of Viscous Flow and Mixing in an Impinging Jet Contactor. *Can. J. Chem. Engr.*, **76**, 546-555.
- Zhao, Y. and R. S. Brodkey, 1998. Particle Paths in Three-Dimensional Flow Fields as a Means of Study: Opposing Jet Mixing System. *Powder Technology*, **100**/2-3 , 161-5.