

Richard W. Baker, Ph.D.

Richard Baker received his doctorate in physical chemistry in 1966 at Imperial College, London, where he studied under Professor R. M. Barrer, one of the pioneers of membrane science. Subsequently, he joined Amicon Corporation, Lexington, MA, and developed a series of ultrafiltration membranes now sold under the name Diaflow[®]. While at Alza Corporation, Palo Alto, CA from 1971 to 1974, he collaborated in the development of the Ocusert[®] ocular delivery system. In 1974, he co-founded Bend Research, Inc., Bend, OR, where he was the Director of Research until 1980.

In 1982, Dr. Baker founded his second company, Membrane Technology and Research, Inc. (MTR), where he served as president for twenty-five years. Dr. Baker's work at MTR focused on two areas: membrane-based drug delivery systems and membranes for industrial separations. The drug delivery technology was spun off in a joint venture, Pharmetrix Corporation, with Recordati Industria Chimica e Farmaceutica S.p.A. in 1987. Dr. Baker was president of Pharmetrix until 1989 and served on the Board of Directors until 1994.

MTR has become a leading membrane research, development, engineering, and production company, concentrating on the development of membranes and membrane systems for industrially and environmentally significant separations. The company's principal membrane products are VaporSep[®] membrane systems to remove organic vapors from air and nitrogen. More than 100 commercial units have been installed worldwide in chemical and petrochemical plants. MTR has also developed other gas separation technologies for applications in the natural gas processing and petroleum refining industries.

In 2007, Dr. Baker stepped aside as MTR's president, but remains a member of the Board of Directors, and is leading a new development program for MTR's membrane-based biomass/biofuel ethanol separations technology.

Dr. Baker is involved in the membrane research community and frequently gives presentations and educational workshops at national and international meetings. He is a founder and past president (1981-82) of the International Controlled Release Society and also helped found the North American Membrane Society (NAMS), serving on the NAMS governing board from 1986 to 1989. He has served on the editorial boards of *The Journal of Membrane Science*, *Industrial & Engineering Chemistry Research*, *The Journal of Controlled Release* and *Separation and Purification Technology*, and served as editor of the NAMS quarterly newsletter for several years.

His work in membrane science has been recognized by several awards, including an IR 100 Award in 1984 for work on facilitated transport gas separation membranes and another in 1990 for the development of the MTR membrane vapor separation technology. He received the Controlled Release Society's Founders' Award in 1985. In 1997, he received the *Chemical Engineering Magazine* Kirkpatrick award for monomer recovery in polyolefin plants. In 2002, Dr. Baker received the first Alan S. Michaels Award for Innovation in Membrane Science and Technology, presented by the North American Membrane Society.

Dr. Baker is the author of more than 100 papers and over 130 patents, all in the membrane area. His book, *Controlled Release of Biologically Active Agents* was published in 1987, and three editions of his book *Membrane Technology and Applications* were published in 2000, 2004, 2012, and 2024.

Employment History

August 1960 – August 1963	Chelsea College of Science and Technology London University (B.Sc)
August 1963 – October 1966	Imperial College, London University (PhD)
November 1966 – June 1968	Amicon Corporation, Boston, MA
July 1968 – December 1969	Brooklyn Polytechnic Institute New York, NY (Postdoctoral),
January 1970 – June 1974	Alza Corporation, Palo Alto, CA
June 1974 – June 1980	Bend Research, Inc., Bend, OR
June 1980 – January 1982	Fraunhofer Research Institute Stuttgart, Germany
February 1982 – present	Membrane Technology and Research, Inc. Menlo Park and Newark, CA

A list of Dr. Baker's publications and patents follows; several additional patents are pending.

Monographs

- R.W. Baker, *Controlled Release of Biologically Active Agents*, John Wiley & Sons, New York (1987).
- R.W. Baker, *Membrane Technology and Applications*, McGraw-Hill, New York, NY (2000).
- R.W. Baker, *Membrane Technology and Applications*, 2nd edition, John Wiley & Sons, Ltd, Chichester, UK (2004).
- R.W. Baker, *Membrane Technology and Applications*, 3rd edition, John Wiley & Sons, Ltd, Chichester, UK (2012).

Encyclopedia Articles

- R.W. Baker, "Membrane Technology," in *Kirk-Othmer Encyclopedia of Chemical Technology*, Fourth Edition, Vol. 16, John Wiley & Sons, Inc. (1995).
- R.W. Baker, "Membrane Separation," in *Encyclopedia of Separation Science*, Academic Press, London, U.K. (2000).
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- R.W. Baker, "Membrane Technology," in *Encyclopedia of Polymer Science*, Third Edition, John Wiley & Sons, Inc., New York (2001).
- G. Santus and R.W. Baker, "Controlled Release of Pharmaceuticals," in *Encyclopedia of Physical Science and Technology*, Third Edition, R.A. Meyers (ed.), Academic Press, San Diego, CA (2002).
- H. Lin, L.S. White, K.A. Lokhandwala and R.W. Baker, "Natural Gas Purification," in *Encyclopedia of Membrane Science and Technology*, E.M.V. Hoek and V.V. Tarabara (eds.), John Wiley & Sons, Inc., Hoboken, New Jersey, 1644-1667 (2013).

Edited Books

- R.W. Baker, Ed., *Controlled Release of Bioactive Materials*, Academic Press, New York, NY (1980).
- R.W. Baker, E.L. Cussler, W. Eykamp, W.J. Koros, R.L. Riley, and H. Strathmann, *Membrane Separation Systems*, Noyes Data Corp., Park Ridge, NJ (1991).

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3. R.W. Baker, "Methods of Fractionating Polymers by Ultrafiltration," *J. Appl. Polym. Sci.* 13, 369-376 (1969).
4. R.W. Baker and H. Strathmann, "Ultrafiltration of Macromolecular Solutions with High-Flux Membranes," *J. Appl. Polym. Sci.* 14, 1197-1214 (1970).
5. H. Strathmann, P. Scheible, and R.W. Baker, "A Rationale for the Preparation of Loeb-Sourirajan-Type Cellulose Acetate Membranes," *J. Appl. Polym. Sci.* 15, 811-828 (1971).

6. D.F. Bradley and R.W. Baker, "Gas Separation with Porous Anisotropic Polymer Films," *Polym. Eng. Sci.* 11(4), 284-288 (1971).
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Memberships

- American Association for the Advancement of Science
- American Chemical Society
- European Society of Membrane Science and Technology
- The Controlled Release Society: Program Chairman, 1979; President, 1981-82
- North American Membrane Society: Board of Directors 1986-89

Editorial Boards

- Journal of Membrane Science (1978-87, 1991-present);
- Industrial and Engineering Chemistry (2009-2012);
- Journal of Controlled Release (1984-1996),
- Separation and Purification Technology (2000-2003),
- Biomedical Polymers, Topics in Controlled Release Science (1985-86).

Editor: North American Membrane Society Quarterly (1986-89)

Awards

- R&D-100 Award for Research on Oxygen Facilitated Transport Membranes, 1984
- Founders' Award, Controlled Release Society, 1985
- Innovation Award: San Francisco Small Business Administration District, 1986
- R&D 100 Award for Membrane Vapor Recovery Systems, 1990
- 1997 Chemical Engineering Magazine's Kirkpatrick Award for Monomer Recovery in Polyolefin Plants
- 2002 American Institute of Chemical Engineers, Separation Division Award
- 2002 North American Membrane Society, Alan S. Michaels Award