

## **BRUCE E. RITTMANN**

### **Professor and Director**

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#### **Education:**

- Ph.D. Environmental Engineering., Stanford University (1979)
- M.S. Environmental Engineering., Washington University (1974)
- B.S. Civil Engineering., Washington University (1974)

#### **Professional Appointments:**

- Director, Center for Environmental Biotechnology, Biodesign Institute at Arizona State University (1/2005-present)
- Professor, Dept. of Civil and Environmental Engineering, Arizona State University, with an affiliate appointments in the Dept. of Chemical Engineering, School of Life Sciences, and School of Sustainability (1/2005- present)
- John Evans Professor of Environmental Engineering, Dept. of Civil and Environmental Engineering, Northwestern University (9/1992-12/2004)
- Professor of Environmental Engineering, University of Illinois at Urbana-Champaign (1988-1992)
- Associate Professor of Environmental Engineering, University of Illinois at Urbana-Champaign (1984-1988)
- Assistant Professor of Environmental Engineering, University of Illinois at Urbana-Champaign(1980-1984)
- Post-Doctoral Scholar and Lecturer, Stanford University (1979)
- Lecturer, San Jose State University, San Jose, CA (1979)
- Graduate Research Assistant, Stanford University (1975-1979)
- Environmental Engineer, Sverdrup & Parcel and Associates, Inc., St. Louis, MO (1974-1975)
- Pilot-plant operator, Metropolitan Sewer District, St. Louis, MO (1971).

#### **Honors and Awards:**

- Innovator of the Year, Arizona Technology Enterprises (2007)
- New Innovator of the Year, Arizona Technology Enterprises (2006)
- Honorary Professor, Harbin Institute of Technology, Harbin, P.R. of China (2006)
- Honorary Professor, Tongji University, Shanghai, P.R. of China (2005)
- Honorary Professor, Shanghai Normal University, Shanghai, P.R. China (2005)
- Member, National Academy of Engineering (2004)

- Honorary Member, World Innovation Foundation (2004)
- Distinguished Lecturer, Association of Environmental Engineering and Science Professors (2004)
- Editor's Award, *J. Environmental Engineering*, American Society of Civil Engineers (2004)
- Visiting Professor, Hokkaido University, Sapporo, Japan (2004)
- Faculty of 1000, Microbiology Section (2003)
- ISI List of Most Highly Cited Researchers, Institute for Scientific Information (2002)
- Guest Professor, Nanchang Institute of Aeronautical Technology, Nanchang, P.R. of China (2002)
- Editor's Award, *J. Environmental Engineering*, American Society of Civil Engineers (2001)
- Visiting Professor, Institut für Abfallwirtschaft und Alasten, Technical University of Dresden, Germany (2001)
- Visiting Professor, Research Center for Environmental Quality Control, Kyoto University, Japan (1999)
- 1999 Award of Excellence in Research and Development, Ontario Ministry of the Environment; with R. K. Rowe and several colleagues at the U. Western Ontario (1999)
- Visiting Professor, Research Center for Environmental Quality Control, Kyoto University, Otsu City, Shiga, Japan (1999)
- Founders Award, USA National Committee, IAWQ; with H. Yu (1998)
- Travel Fellowship, Japan Society for the Promotion of Science (1997)
- Fellow, American Association for the Advancement of Sciences (1996)
- CH<sub>2</sub>M-Hill Award, Association of Environmental Engineering Professors; with Eric Seagren (1995)
- Montgomery-Watson Award, Association of Environmental Engineering Professors; with John Wooschlager (1995)
- A. R. I. Clarke Prize for Outstanding Achievement in Water Science and Technology, National Water Research Institute (1994)
- Engineering Science Award, Association of Environmental Engineering Professors; with Wookeun Bae (1993)
- J. M. Montgomery Award, Association of Environmental Engineering Professors; with Daniel Noguera (1992)
- Walter L. Huber Research Prize, American Society of Civil Engineers (1990)
- Academic Achievement Award, American Water Works Association; with Jacques Manem (1990)
- CH<sub>2</sub>M-Hill Award, Association of Environmental Engineering Professors; with Jacques Manem (1989)
- University Scholar, University of Illinois (1987)
- Best Paper Award, Illinois Water Pollution Control Association; with E. Namkung (1987)
- Xerox Faculty Research Award, College of Engineering, University of Illinois at Urbana-Champaign (1985)
- Presidential Young Investigator Award, National Science Foundation (1984)

- Chi Epsilon Honor Initiate, University of Illinois (1982)
- Engineering Science Award, Association of Environmental Engineering Professors; with Perry McCarty (1979)
- E. O. Sweetser Award, Department of Civil Engineering, Washington University (1973)
- Tau Beta Pi (1972)
- Bausch & Lomb Science Prize (1969)

**Distinguished Professional Service:**

- Editorial Board, *Frontiers of Environmental Science & Technology in China* (2007)
- Editorial Board, *The ISME Journal: Multidisciplinary Journal of Microbial Ecology* (2007)
- Editorial Board, *Microbial Ecology* (2006)
- Co-Chairman, Leading Edge Technology Conferences, International Water Association (2004-2007)
- Editorial Advisory Board, *Environmental Science & Technology* (2003-2007)
- Faculty of 1000, Microbiology Section (2003-2007)
- Review Coordinator, National Research Council (2002)
- Environmental Engineering Committee, Science Advisory Board, Environmental Protection Agency (2001-2003)
- Sub-committee on Research on Monitored Natural Attenuation, Science Advisory Board, U.S. Environmental Protection Agency (2000)
- Chairman, Panel on Intrinsic Remediation, National Research Council, National Academy of Sciences (1997-2000)
- Editorial Board, *Environmental Microbiology* (1998 – 2003)
- Editorial Board, *Water Environment Research* (1998-2003)
- Chairman, IAWQ Specialists Conference on Microbial Ecology of Biofilms (1996-1998)
- Vice-Chairman, WERF-sponsored workshop on Biotechnology and Wastewater Treatment (1998)
- Editor-in-Chief, *Biodegradation*, Kluwer Academic Publishers (1996-2004)
- Program Committee, IAWQ Workshop on Biofilm Structure, Growth, and Dynamics, Amsterdam, The Netherlands (1995)
- Vice-Chairman, Water Science and Technology Board, National Research Council, National Academy of Science (1994-1997)
- Program Committee, IAWQ Specialty Conference on Biological Degradation of Organic Chemical Pollutants in Biofilm Systems, Copenhagen, Denmark (1994)
- Management Group, IAWQ Specialists Group on Biofilm Systems (1993-1997)
- Chairman, Panel on In Situ Bioremediation, National Research Council, National Academy of Sciences (1992-1993)
- Water Science and Technology Board, National Research Council, National Academy of Sciences (1991-1997).
- Managing Editor, *Biodegradation*, Kluwer Academic Publishers (1990-1996)
- Panel on Simulation of Contaminant Transport in Groundwater, National Research Council, National Academy of Sciences (1987-1989)

- Organizing Committee, Dahlem Conference on Biofilm Structure and Function (1989)
- Board of Directors, Association of Environmental Engineering Professors (1988-1992); Vice-President (1989-1990); President (1990-1991), Past-President (1991-1992)
- Advisory Committee for the Critical Engineering Systems Division, National Science Foundation, (1986-1990).

**Publications:**

Over 375 publications (listed separately) including articles, book chapters, books, and reports in the areas of biofilm kinetics and processes, biodegradation of organic chemicals, bioremediation, biological stability of drinking water, microbial ecology, biogeochemistry, and related topics.

**Patents:**

- Means for Qualitative and Quantitative Analysis of Microbial Populations Present in a Sample, awarded as European Patent 98952692.6-2116 (April 4, 2000); U.S.A. patent 6,808,879 (October 26, 2004); applied for in Mexico, Australia, Canada, and Japan.
- Hollow-Fiber Membrane Biofilm Reactor for Autohydrogenotrophic Treatment of Water, awarded as USA patent 6,387,262 (May 14, 2002)
- Perchlorate Reduction and Related Water Treatment Methods; U.S. patent no. 7,186,340 (March 6, 2007).
- Apparatus for Water Treatment; U.S. patent filed June, 2004.
- The Aerobic and Anoxic Membrane Biofilm Reactor System; U.S. and P.C.I. patent filed May 2005
- Improvement of the Mechanical Properties of Cohesionless Soil by Microbially Induced Mineral Precipitation, disclosure filed with AZTE January 2006.
- Modified Cyanobacter, U.S. provisional patent filed November 2006.
- Intimate Coupling of Photobiocatalysis in a Photocatalytic Circulating-Bed Biofilm Reactor (PCBBR). U.S. Patent filing being prepared

**Professional Organizations:**

- Water Environment Federation (WEF)
- American Society of Civil Engineers (ASCE)
- American Association for the Advancement of Sciences (AAAS)
- International Water Association (IWA, formerly IAWQ)
- Association of Environmental Engineering and Science Professors (AEESP)
- American Water Works Association (AWWA)
- American Society for Microbiology (ASM)
- American Chemical Society (ACS)
- International Society for Microbial Ecology (ISME)
- National Writers Union (NWU)

**Professional Service**

Engineering Profession (not listed above)

- Research Symposia and Program Committee, Water Pollution Control Federation (1983-1985)
- Chairman, Student Activities Committee, Illinois Water Pollution Control Association (1983-1986)
- Awards Committee, Illinois Water Pollution Control Association (1984-1987); Chairman of Best Paper Award Committee (1984-1986)
- Academic Achievement Awards Committee, American Water Works Association (1985-1987)
- Research Division Organic Contaminants Committee, American Water Works Association (1986-1992)
- Advisory Board, Illinois Center for Solid Waste Management and Research (1987)
- Project Advisory Committees, American Water Works Association Research Foundation (1990-1995)
- Awards Committee, Association of Environmental Engineering Professors (1993-1996)
- Scientific Advisory Board, NSF Center on Biofilm Engineering, Montana State University (1993-01)
- Representation of AEEP to the United States of America Organizing Committee (USANC) of the IAWQ (1992-1994)
- Chairmen, AEEP Committee on Conferences, Workshops, and Receptions (1994-95)
- Program Committee, World Environment Congress (1994-95)
- Program Committee, IAWQ Biofilm Systems Conference, New York (1998-99).

#### University of Illinois at Urbana-Champaign

- *Ad Hoc* committee on hazardous waste management (1983-1984)
- Freshmen Chemistry Liaison Committee (1983-1990); Chairman (1988-1990)
- Ad Hoc Committee on Refuse Incineration (1985)
- College of Engineering Committee on Bioprocess Engineering (1985)
- College of Engineering Committee on the Program in Biological Engineering (1986-1987)
- College of Engineering Committee on Planning the Undergraduate Curriculum for the 1990s (1986-1988)
- Chairman, Bioprocess Engineering Laboratory Search Committee, College of Engineering (1986-1987)
- Advisory Committee, University of Illinois Biotechnology Center (1987-1991)
- College of Engineering Committee to evaluate a common curriculum for the first two years of the undergraduate program (1990-1991)
- College of Engineering Committee to evaluate transfers and the technical grade point average (1991-1992)
- Discover Session Leader, Honors Symposium (1989-1992)

#### Northwestern University

- Co-chairman, Steering committee for the Institute for Sustainable Technologies (2002-2003)
- Co-chairman, Environmental Sciences Task Force (2002)
- Area Coordinator, Environmental Engineering in Civil Engineering (1992-2002)
- Co-chairman, Environmental Council (1992-00)

- Chairman, Environmental Biotechnology and Bioremediation Initiative (1992-99)
- McCormick School Committee on Excellence (1992-94)
- McCormick School Committee to Review Junior Faculty Appointments (1993-97; chair, 1996-97)
- Executive Committee of the Civil Engineering Department (1993-95; 1996-98)
- McCormick Promotion and Tenure Committee (1994-96; 2000-01)
- Program Review Committee (1994-95)
- Alumni Education Speaker (1995)
- Advisory Board, Biotechnology Center (1995-00)
- Civil Engineering Self-Study Committee (1995-96)
- Policy Series Review Committee (1996-97)
- Civil Engineering Strategic-Planning Committee (1997-98)
- Search Committee for the Dean of McCormick (1998-99)

### Arizona State University

- Dean Search Committee, Fulton School of Engineering (2005-06)
- *Ad hoc* Committee to Create Procedures for Hiring and Promoting Research Professors, Biodesign Institute (2005)
- Chair Search Committee, Department of Civil and Environmental Engineering (2006-2007)
- Bioenergy-Cluster Faculty Search Committee, pan-ASU (2006-2007)

### The Community

- Chairman, Vice-Chairman, and Secretary, Prairie Group of the Sierra Club (1980-1982)
- Principal member, Abbott Reconversion Study Group (1981-1985)
- Principal member, Responsible Waste Management (1982-1986)
- Board of Directors, Central States Education Center (1984-1992)
- Advisory Committee, Urbana Park District (1986-1987)

### Reviewer for Journals, Publishers, and Agencies

*Proceedings of the National Academy of Sciences*  
*Water Environment Research*  
*J. Environmental Engineering, ASCE*  
*Environmental Science & Technology*  
*Biotechnology and Bioengineering*  
*Water Research*  
*Water Science and Technology*  
*Water21*  
*J. American Water Works Association*  
*Water Resources Research*  
*Water Pollution Research J. of Canada*  
*Activated Carbon Technology*  
*Environmental Technology Letters*  
*Environmental Technology*  
*J. Industrial Microbiology*

*Canadian J. of Civil Engineering*  
*Biodegradation*  
*Applied and Environmental Microbiology*  
*Applied Microbiology and Biotechnology*  
*Environmental Microbiology*  
*Advances in Soil Science*  
*Limnology and Oceanography*  
*J. Environmental Quality*  
*Engineering Science, J. of King Saud University*  
*Revue des Sciences de l'Eau*  
*AQUA*  
*J. Hazardous Materials*  
*J. Air & Waste Management Association*  
*Environmental Engineering Science*  
*Industry and Engineering Chemistry Research*  
*Aquaculture Engineering*  
*Industrial and Engineering Chemistry Research*  
*J. Environmental Engineering and Science*  
*Environmental Technology*  
*Geomicrobiology Journal*  
*Journal of Chemical Technology and Biotechnology*  
*Biotechnology Progress*  
*Science of the Total Environment*  
*J. Environmental Management*  
*Critical Reviews in Environmental Science and Technology*  
*International Journal of Hydrogen Energy*  
*Industrial & Chemistry Engineering Research*  
*Electrochimica Acta*  
American Chemical Society  
Prentice-Hall Publishers  
Academic Press, Inc.  
John Wiley & Sons, Inc.  
McGraw-Hill Book Co.  
CRC/Lewis Publishers, Inc.  
American Chemical Society Books  
National Research Council  
National Science Foundation  
Environmental Protection Agency  
Department of Energy  
National Aeronautics and Space Administration  
National Institutes for Health  
U. S. Geological Survey  
Natural Science and Engineering Research Council of Canada  
United States-Israel Binational Science Foundation  
American Water Works Association Research Foundation  
New York State Center for Hazardous Waste Management  
Illinois Hazardous Waste Research and Information Center  
University Council on Water Resources  
Illinois Water Resources Center

Virginia Water Resources Center  
Minnesota Water Resources Center  
Wisconsin Water Resources Institute  
University of Illinois Research Board  
Natural Environment Research Council, United Kingdom  
New Mexico Water Resources Institute  
Cornell University Theory Center  
St. Lawrence Centre, Montréal  
Illinois Groundwater Consortium  
Great Lakes and Mid-Atlantic Hazardous Substances Research Center  
Oak Ridge National Laboratory  
University of Wisconsin Sea Grants Center  
Illinois-Indiana Sea Grant Center  
U.S. Civilian Research and Development Foundation  
Science Foundation of Ireland  
South Carolina NASA/EPSCoR