

# Thinking Like Microorganisms



**Bruce Rittmann**

Director, Swette Center for Environmental Biotechnology Regents' Professor of Environmental Engineering, School of Sustainable Engineering and the Built Environment

## CURRENT RESEARCH

Work for microorganisms so they do the work for us

When you consider microorganisms, your first thought may not be health benefits or sustainable energy. However, Dr. Bruce Rittmann, of Arizona State University, is focused on using these microscopic living organisms for just that. As one of the world's most highly cited researchers, with more than 500 peer-reviewed papers, Dr. Rittmann works to understand and manage microbial communities so that they can provide us with invaluable services such as cleaning up pollution, producing renewable resources, and improving our health. By partnering with microorganisms, he and his team are able to take advantage of their special metabolic capabilities. Dr. Rittman explains, by thinking like microorganisms, he and his team are able to, "work for the microorganisms so that they work for us," thereby improving environmental quality, society's sustainability, and human health.

To understand the microbial communities, Dr. Rittmann and his team use an amazing set of skills from a multitude of disciplines, including chemical, environmental, and electrical engineering; microbiology, biochemistry, and ecology; biogeochemistry; organic and inorganic chemistry; mathematical modeling; medicine; and materials science. Due to the extraordinarily multidisciplinary nature of such work, Dr. Rittmann's research requires the formation of trans-disciplinary teams within the Swette Center for Environmental Biotechnology and around the world. This unique approach, which harnesses the potential of microorganisms to provide services that make human society more sustainable, is likely to make a large impact on our society. From the fundamental investigations to the in-field applications, Dr. Rittmann's leadership has guided his team towards...

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## AFFILIATION

Arizona State University

## EDUCATION

- Ph.D. in Environmental Engineering 1979 ,Stanford University
- M.S. in Environmental Engineering 1974 ,Washington University in St. Louis
- B.S. in Civil Engineering 1974 ,Washington University in St. Louis

## AWARDS

- BioCluster Award, International Water Association and International Society for Microbial Ecology, 2014
- Joan Hodges Queneau Palladium Medal, American Association of Engineering Societies (AAES), 2014
- Distinguished Member, American Society of Civil Engineers (ASCE), 2012
- Simon A. Freese Award and Lecture, American Society of Civil Engineers, 2009
- Member, National Academy of Engineering, 2004

## RESEARCH AREAS

Environment, Clean Energy, Clean Energy

## FUNDING REQUEST

Your contributions will support the continued research of Dr. Rittmann as he uses microorganisms to improve environmental quality, human health, and society's sustainability. Modest donations of \$50-\$100K will allow Dr. Rittmann to extend or accelerate his current research. Larger donations will support major advancements to the science base and towards commercialization of successful products. Your support will allow researchers to continue to work for microorganisms so that they can work for us!