
the
KAPPE
LECTURE
Series

2009

Sharing the
knowledge
of today's
practitioners with
tomorrow's
engineers

THE 2009 KAPPE LECTURER



RAO Y. SURAMPALLI, PH.D., P.E., BCEE, F.AAAS

Engineer Director, United States Environmental Protection Agency

EDUCATION

Oklahoma State University, MS

Iowa State University, Ph.D.

PROFESSIONAL CREDENTIALS

Registered Professional Engineer

Board Certified Environmental Engineer, American Academy of Environmental Engineers

Diplomate, American Academy of Water Resources Engineers

Fellow, American Association for the Advancement of Science

Fellow, American Society of Civil Engineers

Member, European Academy of Sciences and Arts

PROFESSIONAL HONORS

National Government Civil Engineer of the Year

State-of-the-Art of Civil Engineering Award

Rudolph Hering Medal

Wesley Horner Medal

Best Practice Oriented Paper Award

Founders Gold Medal

National Federal Engineer of the Year

Top Ten Federal Engineers of the Year

Philip Morgan Award

Scientific and Technological Achievement Award

EPA Engineer of the Year

Outstanding Service Medal

Hollis Medal

Distinguished Military Service Award

Samuel Lin Award

Dr. Rao Y. Surampalli, Engineer Director with United States Environmental Protection Agency (USEPA), has been with EPA for the past 23 years. His career in private practice, government, university and applied research has given him the opportunity to experience and appreciate the varied interests and challenges of the environmental engineering profession. His main expertise is in the area of water/wastewater treatment, sludge treatment/disposal, hazardous/solid waste management, and soil and groundwater treatment.

He has authored more than 400 technical publications, including 8 books, 42 book chapters, 142 refereed (peer-reviewed) journal articles, presented at more than 190 national and international conferences, edited 12 refereed conference proceedings, and given over 60 plenary, keynote or invited presentations worldwide. Currently, he serves on many national and international committees, review panels, or advisory boards including the ASCE's National Committee on Energy, Environment and Water Policy. He is Editor of two well known refereed journals — the *Water Environment Research Journal* published by the Water Environment Federation (WEF), and the *Hazardous, Toxic, and Radioactive Waste Management Journal* published by the American Society of Civil Engineers (ASCE). He also serves on the Editorial Boards of three other refereed Environmental Journals. He is as well an Adjunct Professor of Environmental Engineering at six universities: Iowa State University-Ames, University of Missouri-Columbia, University of Nebraska-Lincoln, University of Quebec-Sainte Foy, Tongji University-Shanghai, and Missouri University of Science and Technology-Rolla. He also is an Honorary Professor in Sichuan University-Chengdu.

He has provided technical assistance, facilitated technology transfer, and built technical capacity for numerous developed and developing nations including Brazil, India, Nepal, Taiwan, Japan, Thailand, Philippines, Namibia, Kazakhstan, Panama, Germany, Slovenia, Hong Kong, Ghana, China and Korea. A noteworthy humanitarian, his most recent voluntary contributions include working in India, Namibia, Kazakhstan and Panama to develop environmental protection and improvement programs. He was also selected to participate on a multi-disciplinary engineering team organized by the ASCE to evaluate the ecological and environmental impacts of the 2004 Indian Ocean Tsunami.

Named a Distinguished Engineering Alumnus of both the Oklahoma State University and Iowa State University, Dr. Surampalli was elected a Fellow of the American Association for the Advancement of Science (AAAS) in 2005, and a Member of the European Academy of Sciences and Arts (EASA) in 2008. AAAS is the world's largest scientific society and election as a fellow recognizes an individual for his/her "efforts toward advancing science or fostering applications that are deemed scientifically or socially distinguished". He also is a Fellow of the American Society of Civil Engineers.

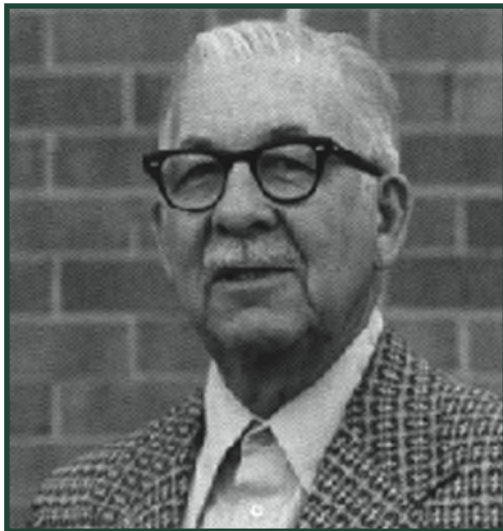
ABSTRACTS OF LECTURES OFFERED

NANOTECHNOLOGY AND THE ENVIRONMENT

Nanotechnology presents new opportunities to create better materials and products. Applications of nano-materials in environmental protection have created conditions to improve environment and control pollution, which will bring breakthrough progress to environmental science and engineering. Using nano-materials to solve environmental issues will become an inexorable trend in the future. Applications of nano-materials in green chemistry, photocatalytic degradation of organic pollutants, remediation of polluted soils or water, pollutant sensing and detection, and so on, have been introduced. Our economy will be increasingly affected by nanotechnology as more products containing nanomaterials move from research and development into production and commerce. Nanotechnology also has the potential to improve the environment, both through direct applications of nanomaterials to detect, prevent, and remove pollutants, as well as indirectly by using nanotechnology to design cleaner industrial processes and create environmental friendly products. However, there is a need for research to better understand and apply information regarding nanomaterials such as: chemical identification and characterization, environmental fate, environmental detection and analysis, potential releases and human exposures, human health effects assessment, ecological effects assessment, and environmental technology applications. The presentation will discuss the potential environmental applications of nanomaterials and nanotechnologies.

EMERGING CONTAMINANTS OF ENVIRONMENTAL CONCERN

Emerging contaminants of environmental concern have been widely distributed in the environment and attracted increasing attention over the past decades. The emerging contaminants include endocrine-disrupting compounds, surfactants and their degradation products, plasticizers, pesticides, retardants, and nanoparticles. These compounds can enter the environment after their application, after use they are usually discharged into municipal sewer systems and afterwards treated in wastewater treatment plants, where they are completely or partially removed by a combination of sorption and biodegradation. Many studies have confirmed the presence of complex mixtures of unregulated contaminants, having various origins, and raised concern about their potential interactive effects. These substances among different phases (air, water and sediment/soil) in the environment are presented. Their occurrence and behavior (fate and transport) in natural and engineered systems including treatment are discussed.



"A man's debt
to his profession
is to help
those that follow"

STANLEY E. KAPPE, P.E., DEE, a successful environmental engineer, believed he owed a debt to the profession that rewarded him so well. During his life, he gave of himself to his university and to his profession through countless hours of volunteer activity. And, through this Lecture Series, he continues to share his good fortune with tomorrow's environmental engineers.

He graduated from Pennsylvania State University in 1930 with a bachelor's degree in sanitary engineering. He served with the Pennsylvania State Health Department and the U.S. Army Corps of Engineers before joining the Chicago Pump Company as its Eastern Regional Manager in 1935. In 1945, he founded Kappe Associates, Inc., a water supply and wastewater equipment company headquartered in Rockville, Maryland, and continued as its Chief Executive Officer until his death in 1986.

His peers recognized his contributions to the profession by numerous awards, including the AWWA Fuller Award, the WPCF Arthur Sidney Bedell Award, the WPCAP Ted Moses and Ted Haseltine Awards, and the AAEE Gordon Maskew Fair Award. In 1985, Pennsylvania State University named him Outstanding Engineer Alumnus.

Stanley E. Kappe was an activist member and leader in several national and Chesapeake region professional societies. He served as the Executive Director of the American Academy of Environmental Engineers from 1971 to 1981.



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