

## IN MEMORIAM

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### **Pan Ming Huang (1934 - 2009)**

*On September 13, 2009, our colleague Prof. Pan Ming Huang, Professor Emeritus of Soil Science at the University of Saskatchewan, Saskatoon, Canada passed away. His death is a great loss for the humic substances community. We will always treasure his memory.*



Prof. Pan Ming Huang was born in Taiwan on September 2, 1934, and after growing up there and graduating in Agricultural Chemistry from the National Chung Hsing University, he moved to the University of Manitoba, Winnipeg in 1961. It was there that he met Lin, the lovely young woman who was to become his wife. He moved on to the University of Wisconsin at Madison upon completing his masters in 1962, studying for his Ph.D with Prof. M. L. Jackson, one of the world's most highly regarded soil scientists. Prof. Huang and Prof. Jackson worked well together, developing a warm friendship that continued for decades. Prof. Huang received his Ph.D. degree in Soil Science

In 1965 he travelled to Saskatoon having accepted a position in the Department of Soil Science at the University of Saskatchewan. In 1966 he and Lin were married. Lin has been a wonderful companion and support for him. They have two children: Daniel and Crystal.

Prof. Huang was a leading international authority on environmental soil chemistry, with emphasis on mineral colloids and organo-mineral complexes, their reactions with nutrients and pollutants in soils and waters and the impact on ecosystem health. He has pioneered extensive chemical, spectroscopic, and ultramicroscopic research on the formation mechanisms of short-range ordered (poorly crystalline) mineral colloids which are extremely reactive in governing the accumulation, transport, and bioavailability of nutrients and pollutants in the environment. He has done groundbreaking work in establishing

mineral catalysis mechanisms of transformations of biomolecules such as sugars, phenolic compounds and amino acids, and the resulting formation of humic substances which are essential for maintaining and for enhancing the productivity of the land and are also vital in influencing the dynamics and fate of environmental pollutants. Further, his cutting-edge research has advanced the world's knowledge on the chemistry and behavior of vital and toxic inorganic ions and organic compounds in soils and freshwaters and their impact on agricultural sustainability and ecosystem protection.

In Professor Huang's research on the impact of toxic materials in the environment, he emphasized the harmful effects of ions such as cadmium, arsenic, and mercury in terrestrial and aquatic ecosystems. Because these ions can be taken up by freshwater biota and crop plants, the significance of his work has extended to human and animal health. For example, his laboratory was the first in the world to show the ability of manganese oxides to convert toxic arsenite to much less toxic arsenate through abiotic catalysis. Further, because of substantial uptake of cadmium by cereal crops, his research has contributed to the development of land resource management strategies to enhance the quality of Canadian grains and their competitiveness in international markets. His research accomplishments, embodied in over 300 refereed publications, of which nine were published in *Nature* (London). Furthermore, he has written 2 books, edited 17 books, and successfully trained and inspired Ph.D. and M.Sc. students (more than 60) and postdoctoral fellows (45), and hosted numerous international visiting scientists. Besides his significant contributions to the training of highly qualified personnel and outstanding research accomplishments in fundamental soil and environmental sciences, as founding Chair of both the Working Group "*Interactions of Soil Minerals with Organic Components and Microorganisms*" and Commission 2.5 "*Soil Physical/Chemical/Biological Interfacial Reactions*" of the International Union of Soil Sciences, Prof. Huang was instrumental in promoting worldwide research leading to integration of knowledge on mineral colloids, organic matter, and microorganisms, and its impact on agricultural production, environmental sustainability, and ecosystem health.

In 2000 Prof. Huang served as Editor of Soil Chemistry section of the *Handbook of Soil Science*, but since 2008 he was serving as Editor-in-Chief of the second edition of this handbook, which assembles the core of knowledge from all fields encompassed within the discipline of Soil Science and is, thus, a comprehensive reference work on the discipline of Soil Science as practiced today. Further, Prof. Huang has served as Titular Member of the International Union of Pure and Applied Chemistry (IUPAC) and has been Series Editor of the IUPAC Book Series "Biophysico-Chemical Processes in Environmental

Systems” to promote research and education on physical, chemical, and biological interfacial interactions in the environment on a global scale.

He has developed and taught courses in soil physical chemistry and mineralogy, soil analytical chemistry, and ecological toxicology. He has served on numerous national and international scientific and academic committees. He also has served as a member of many editorial boards such as the Soil Science Society of America Journal, Geoderma, Chemosphere, Water, Air and Soil Pollution, Soil Science and Plant Nutrition, and Pedosphere. He received the *Distinguished Researcher Award from the University of Saskatchewan* (1997) and the *Soil Science Research Award from the Soil Science Society of America* (2000). He was a Fellow of the *Canadian Society of Soil Science* (1985), the *Soil Science Society of America* (1985), the *American Society of Agronomy* (1985), the *American Association for the Advancement of Science* (1998), and the *World Innovation Foundation* (2001). He was Honorary Professor of six Chinese Universities.

Prof. Huang was an eminent scholar, a great educator, a man of vision and extraordinary leadership. He was a teacher appreciated for his organization and thoroughness, his passion for science, and for his high expectations. Most of his students and colleagues mention the decisive influence he had on their careers.

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