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HKUST Researchers Made Croucher Senior Research Fellows

Two researchers from the Hong Kong University of Science and Technology (HKUST) were honored with the Croucher Senior Research Fellowships for their fundamental contributions to research on materials science and biochemistry.

[Prof Tong-Yi Zhang](#) , Professor of Mechanical Engineering, and [Dr Mingjie Zhang](#) , Associate Professor of Biochemistry, were among five scholars who received this year's Croucher Senior Research Fellowship Awards.

The scientists were presented award certificates by Dr Alice Lam, Chairman of University Grants Committee, at a ceremony held by the Croucher Foundation today (27 March 2003).

Prof Tong-Yi Zhang's research centers on the fracture of piezoelectric ceramics and the mechanical properties of nanomaterials. Piezoelectric materials are polarized materials that produce an electric field with an imposed mechanical force, and vice versa. They are widely used in sensors, actuators, capacitors and microelectric devices. Prof Zhang has established the fracture mechanic basis for piezoelectric materials by studying the relationship between both mechanical and electrical-fracture toughness. He has also further applied concepts from fracture mechanics to understand electrically induced failures, providing useful criteria for the design of electronic and electromechanical devices.



Prof Tong-Yi Zhang

Prof Zhang received his PhD from the University of Science and Technology, Beijing, in 1985. After graduation, he worked as a research fellow of the Alexander von Humboldt Foundation at Göttingen University in Germany from 1986 to 1988, and was a postdoctoral fellow at the University of Rochester, US, from 1988 to 1990. Prior to joining HKUST's Department of Mechanical Engineering as a Lecturer in 1993, he was an associate research scientist at Yale University from 1990 to 1993. At HKUST, he was promoted to Senior Lecturer in 1995, and has been a Professor since 2002.

Prof Zhang won the State Natural Science Award (second-class) in 1987, the most prestigious award in the field of natural sciences in China, and was presented the National Award for Young Scientists by the China Association for Science and Technology in 1988. He was elected a Fellow of the American Society of Materials International (ASM International) in 2001 for his contributions to the "knowledge of hydrogen diffusion, fracture of piezoelectric ceramics, intercalated graphite, and thin film systems using both analytical and state-of-the-art experimental techniques". An expert in materials science and solid mechanics, Prof Zhang has published more than 100 papers in leading academic journals and co-holds two US patents.



Dr Mingjie Zhang's research focus is neuronal structural biology. He has implemented a combined approach and adopted structural biology, biochemistry and molecular biology to study the structure and functions of proteins in regulating neuronal signal transductions. The

Dr Mingjie Zhang (back row, right)
and his research team

understanding of the mechanism of regulatory proteins is crucial to the treatment of neuronal degenerative diseases, including stroke and Alzheimer's disease. With the help of

NMR spectroscopy, Dr Zhang and his research team are also screening active components from traditional Chinese medicines that can inhibit nitric oxide synthase in neuronal signal transductions. This will help develop potential lead compounds for the treatment of stroke.

Dr Zhang received his BSc in Chemistry from Fudan University, Shanghai, in 1988, and PhD degree in Biochemistry from the University of Calgary in 1993. He worked as a postdoctoral fellow at the National Cancer Institute of Canada before joining HKUST in 1995.

His PhD dissertation earned him the President's List, presented by the Natural Sciences and Engineering Research Council of Canada in 1994, and more recently, in 2002, he was presented the Outstanding Overseas Young Scientist Award for his excellent research by the National Natural Science Foundation of China. He has published 45 papers in leading academic journals including *Science* and *Nature Structural Biology*.

The Croucher Senior Research Fellowships scheme was established in 1997 to recognize research achievements made by local scientists. Awardees are released from teaching and administrative duties for a year to concentrate on research.