

PRESS RELEASE

CIVIL ENGINEER-APPLIED MATHEMATICIAN RECEIVES THE 2003 MAX PLANCK RESEARCH PRIZE IN THE ENGINEERING SCIENCES



On the 26th of November 2003, Dr. A.P.S. Selvadurai, William Scott Professor of Civil Engineering and Applied Mechanics at McGill University received the Max Planck Research Award in the Engineering Sciences for 2003, for his outstanding research achievements in the areas of applied mathematics, theoretical and applied mechanics, environmental geomechanics and computational geomechanics.

The Award is named in honour of the 1918 German Nobel Laureate in Physics, Professor Dr. Max Karl Ernst Ludwig Planck, who is recognized for numerous scientific accomplishments including the discovery of energy quanta. In the ceremony held at the Harnack House of the Max Planck Society, Berlin, Dr. Selvadurai and 11 others awardees were honoured for their scientific achievements in chemistry, engineering sciences, mathematics, neurobiology, physics and social sciences. Only four Max Planck Research Awards were given to researchers from outside Germany. The Awardees were selected from nominations by research scholars at Universities and Research Institutes in Germany. Dr. Selvadurai is the first faculty member at McGill University to receive the Award and the first Canadian engineer-theoretical mechanician to receive the Max Planck Award. Only two other Canadians have received the award since its inception in 1990.

Dr. Selvadurai obtained his PhD degree in Theoretical Mechanics in 1971 from the University of Nottingham, under the tutelage of Professor A.J.M. Spencer FRS, the pre-eminent continuum mechanician, for research in the area of *Second-Order Elasticity Theory*. In 1986, Dr. Selvadurai was the first person to be awarded the research degree of DSc in Theoretical Mechanics from the

University of Nottingham, for research in *Mathematical Modelling of Problems in Geomechanics and Elastomechanics*. Dr. Selvadurai joined the Department of Civil Engineering at Carleton University, Ottawa, Canada in 1975 as Assistant Professor and became Professor and Head of the Department in 1981-1991. He was invited to head the Department of Civil Engineering and Applied Mechanics at McGill University and held this position during the period 1993 to 1996. His research work spans a number of areas in continuum mechanics, computational and experimental geomechanics, and applied mathematics. His research includes topics in mechanics of elastic media undergoing large deformations, fracture mechanics, micromechanics of inclusions and defects, coupled thermo-hydro-mechanical processes in deformable media, flow and transport process in porous geomaterials, mechanics of poroelastic media, mechanics of inhomogeneous media, interfaces in geomechanics and fragmentation of brittle geomaterials. Throughout his academic career he has a strong interest in mathematical modelling of problems in mechanics and geomechanics. He also actively conducts experimental modelling in geomechanics, a rarity for accomplished researchers with interests in theoretical and computational modelling. His current research activities combine theoretical, computational and experimental approaches for the study of coupled thermo-hydro-mechanical processes in geomechanics. These studies are important in geoenvironmental engineering, particularly for the development of technologies for the deep geological disposal of heat-emitting nuclear fuel wastes.

A consultant to number of engineering organizations in Canada and abroad, Dr. Selvadurai is also and the recipient of a number of other prestigious awards: in 1998, he received the *Humboldt Forschungspreistrager Award* of the Humboldt Foundation of Germany, given to Senior Scientists. In 2000, he was awarded the *Killam Research Fellowship* of the Canada Council for the Arts, one of Canada's most distinguished research awards, made in recognition of an outstanding research record combined with proposals for continuing research. He is the first civil engineer in Canada to receive the Killam Research Fellowship and the only Canadian engineer to receive the Max Planck, Humboldt and Killam Research Awards. In 2001, he received the *Inaugural John Booker Medal* of the International Society for Computer Methods and Advances in Geomechanics, was awarded for original and sustained contributions in theoretical geomechanics, applied mathematics and computational, environmental and experimental geomechanics. He has published extensively in journals devoted to applied mechanics, geomechanics, applied mathematics and computational mechanics, with 177 papers in refereed journals, 195 papers in refereed conference proceedings. Dr. Selvadurai is the author of texts devoted to *Soil-Foundation Interaction* (Elsevier, 1979), *Elasticity and Geomechanics* (Cambridge University Press, 1996, Co-Authored with Professor R.O. Davis), *Partial Differential Equations in Mechanics Vols. 1 & 2* (Springer-Verlag, 2000) and *Plasticity and Geomechanics* (Cambridge University Press, 2002, Co-Authored with Professor R.O. Davis) and has edited several other research volumes and Special Issues of leading International Journals. He serves in the Editorial Boards of *nine* leading International Journals devoted to *Geomechanics*, *Computational Mechanics* and *Applied Mathematics*. He has held visiting academic appointments at the University of Nottingham, the Laboratoire Sols, Structures, Solides, Université Joseph Fourier, Grenoble, The University of Canterbury, New Zealand, Hong Kong Polytechnic University, The University of New South Wales, Australia and Ecole Polytechnique Federale de Lausanne, Switzerland. He is a Fellow of the Institute of Mathematics and its Applications, the American Academy of Mechanics, Engineering Institute of Canada and the Canadian Society for Civil Engineering. The Max Planck Award carries with it a monetary

award of Euro 125,000, which will enable him to collaborate with Researchers at the University of Stuttgart and at other Research Institutions in Germany over a five-year period.



A profile of Max Planck taken from a Two-Deutsche Mark coin minted in the former West Germany