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PREFACE

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Special issue on Computational Mechanics

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This special issue contains a selection of invited, full-length, refereed manuscripts from the *Special Symposium on Computational Mechanics*, held in Sydney, Australia on 21st February 2004. The symposium was dedicated to Professor Valliappan on the occasion of his retirement from The University of New South Wales, Australia. It was addressed by the Vice Chancellor of the University of the New South Wales, Professor Rory Hume, along with a number of tributes from his colleagues and friends including Professor O.C. Zienkiewicz. Outstanding contributions were presented by Professors Adachi, Baker, Bradford, Gilbert, Hjiaj, Ichikawa, Khalili, Kelly, Loughran, Petrolito, Randolph, Yagawa, Sakurai, Selvadurai, Sloan, Wriggers and Drs Lawther, Pham, and Pivonka.

Regarded as one of the pioneers in the field of computational mechanics, Professor Valliappan has made many seminal contributions to the fields of structural engineering, rock mechanics, geotechnical engineering, and environmental geomechanics. Some of his highly regarded contributions have included: the development of *stress transfer* method in rock mechanics, *initial stress* method for elasto-plastic analysis, *unified boundary condition* for dynamic analysis, damage mechanics, fracture mechanics, the pioneering work of *fuzzy finite element analysis*, coupled optimization and finite element as well as the development of *infinite element* and *coupled finite element and boundary element* for the earthquake analysis of geotechnical structures. Professor Valliappan has received many prestigious awards and distinctions including: 2001 IACMAG Medal for outstanding and sustained contributions in computational mechanics applied to geotechnical engineering; 2002 IACM Award for outstanding and sustained contributions in the general field of computational mechanics, and 2004 APACM Congress Medal (Zienkiewicz Medal) for outstanding and sustained contributions and leadership in the general field of computational mechanics over a substantial period of professional career.

The papers included in this special issue cover a range of topics, both from the engineering and computational points of view. Some of the topics covered include:

- Contaminant transport through porous media
- Cavity expansion in unsaturated soils
- Finite element analysis of non-isothermal multiphase geomaterials
- Numerical analysis of micro-sorption in bentonite

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