

PREFACE

A series of International Conferences sponsored by ACI and CANMET has been held in Brazil. The first in this series was held in Florianópolis in 1996. The second was in Gramado in 1999, and the third in Recife in 2002. Professors, researchers, engineers, and concrete technologists from all over the world have participated in these conferences. A very large number of students from Brazilian universities have also attended.

These international conferences have shown that Brazilian research is of the same standard as that being done in other developed countries, encouraging our researchers to publish their work in the best technical and scientific journals around the world.

This IV International ACI/CANMET Conference on Quality of Concrete Structures and Recent Advances in Concrete Materials and Testing is dedicated to and in honor of Dr. V. Mohan Malhotra, to whom we owe this series of conferences in Brazil.

Dr. Malhotra is well known for his invaluable contributions in the field of non-destructive testing, the use of superplasticizers, supplementary cementing materials, concrete technology, and more recently in the field of high performance concrete with high volume fly ash and blast furnace slag. He has contributed greatly to the use of industrial waste in the concrete industry. These contributions are of global interest because of their economic, energy, and sustainability implications. As well as authoring over 150 papers published in journals of ACI, ASTM, RILEM, and CSCE, he has chaired more than 50 international conferences; published as author or co-author six books on concrete technology, superplasticizers, and supplementary cementing materials; and edited numerous Special Publications of ACI. In recognition for his innumerable contributions, Dr. Malhotra has received awards in various parts of the world from the most respected institutions in the concrete field.

Dr. Malhotra's professional record is also impressive. He graduated in Sciences at Delhi University, India, in 1951; in Civil Engineering at Western University, Australia,

in 1957; received the Doctor of Law (Hon.) at University of Dundee, Scotland, in 1984, and the Doctor of Engineering (Hon.) at University of Nuevo Leon, México, in 1998. In 1962 he joined CANMET, where he pursued his career culminating with the title of Scientist Emeritus in 1999. He has been an active member of ACI since 1960. He received the Chapter Activities Award in 1977; the Kennedy Award for promoting activities in ACI, and the Wason Award for his research in materials in 1978; the Turner Medals and the Delmar L. Bloem Distinguished Service Award for his excellent contribution to the concrete industry in 1983; the Dakota Chapter Award in 1985; the Atlantic Chapter Award in 1988; the Robert Philleo Award in 1996; the Cedric Willson Award in 1997; and the Award for International Technology Transfer Activities in 2001. In 1986, he became an Honorary Member of ACI. In recognition for his work in ASTM, he received the Stanford E. Thompson Award in 1982; the Charles B. Dudely Award in 1983; the Award of Merit in 1989; and the ASTM Committee C 09 Award of Appreciation in addition to his work for the ACI and ASTM in 1990. Dr. Malhotra is also active in the Canadian Standards Association, RILEM, and the International Standards Organization (ISO).

In the world of concrete technology, Scientist Emeritus V. Mohan Malhotra is not only respected as a competent researcher and prolific author, but also as a specialist in technology transfer.

The present IV International ACI/CAMET Conference, in honor of Dr. Malhotra, received more than 200 abstracts in the first stage and over 100 complete papers from 19 countries in the second stage to be reviewed by a select International Scientific Committee. The papers were grouped under 11 major headings: Chemical Admixtures; Deformations, Creep and Cracking Control; Durability; Fiber Concrete; Fire Resistance; Nondestructive Tests; Quality Control; Strengthening of Structures; Structural Behavior; Supplementary Cementing Materials; and Sustainability. Thirty-two papers were selected for publication in this ACI Special Publication.

Following are the national sponsors of the present conference: Federal University of Goiás (UFG), University of São Paulo (USP), Furnas Centrais Elétricas S. A.

– Civil Engineering Technological Center, University of Pernambuco (UPE), and the Brazilian Concrete Institute (IBRACON).

We wish to thank the following members of the International Scientific Committee for their contributions to the success of this conference:

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