PREFACE

In this special issue of MATCH on 'Graph Theory and Eigenvalues in Chemistry', the editors and authors join together to celebrate the career of a major contributor to the subject. The year 2002 sees the 75th birthday of Professor Horst Sachs, well known in mathematics and mathematical chemistry for his pioneering work over half a century on graph theory and the theory of graph spectra. He has been a leading researcher for over 40 years, a key link between mathematicians East and West, and has taken a lively interest in making real contact with chemistry and other natural sciences. His impressive record of achievement is documented in the bibliography of his papers,conference contributions and books that follows this introduction. The contributions of Professor Sachs, stretching from early papers on trees, forests and circuits in graphs, through a standard German text on Graph Theory, to the classic monograph on Spectra of Graphs (co-authored with D.M. Cvetkovic and M. Doob) were recognised by the award of the Euler Medal for the year 2000 for his career of achievement in mathematics. His 75th birthday in May 2002 was celebrated in true mathematical style, with a conference on Graph Theory in Ilmenau, the University where he taught and researched in mathematics for 29 years from 1963.

The present volume continues this celebratory theme, with a set of contributions that concentrates on the connections between mathematical and chemical graph theory, a theme close to Professor Sachs' heart and a longstanding professional preoccupation. Many of the authors of papers in this volume have worked with Professor Sachs and his school. The papers illustrate some of the traditional areas of overlap between graph theory and chemistry, as well as some newer applications. Construction of graphs, properties of eigenvalues and eigenvectors, investigation of graph invariants and enumeration of substructures all feature in this snapshot collection, along with applications to chemical informatics, hypothetical carbon structures and the physics of amorphous materials.

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