Preface

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This special issue is an outgrowth of the Conference entitled "*Mathematics, Analysis and Control in Chemical Physics and Related Systems*", which was held at the University of Nevada Las Vegas (UNLV), Las Vegas, Nevada, USA, December 14–17, 2010. It contains fourteen papers authored by invited speakers and contributed speakers of this Conference. Most of them concern the mathematical aspects of recent progress in chemical physics.

In the past decade, new laser technology has opened up new frontiers for coherent control of quantum dynamics. There has been rapid growth in the multidisciplinary research of molecular simulation and control at the interfaces of chemistry, physics and mathematics. The UNLV Conference brought together leading experts from a broad spectrum of areas to identify mathematical and numerical challenges in molecular simulation and control and present new methods for addressing these challenges. There were sixteen plenary talks given by leading researchers (five mathematicians, six physicists and five chemists), and seventeen contributed talks given by participants on related subjects.

We would also like to dedicate this special issue to Professor Goong Chen of Texas A&M University, College Station, Texas, USA, on the occasion of his 60th birthday. Professor Goong Chen is well-known for his contributions in many areas of applied and computational mathematics: control theory for partial differential equations, boundary element methods and numerical solutions for linear and nonlinear partial differential equations, chaotic dynamics, quantum computing, chemical physics and quantum mechanics. He has published over one hundred and thirty papers and five advanced texts/monographs, and co-edited four

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books. Some of the authors in this special issue are former students or collaborators of Professor Goong Chen.