*Dedicated to Professor Max Gunzburger
on the occasion of his 60th birthday*

"What we do is develop, implement, analyze, test, and apply new algorithms that can be used to better solve problems, thus enabling advances in science and engineering."

-Max Gunzburger

FOREWORD

This peer-reviewed special issue is dedicated to Professor Max D. Gunzburger in celebration of his sixtieth birthday and his distinguished career achievements.

Professor Gunzburger is a preeminent computational and applied mathematician of our times with numerous groundbreaking and seminal works. He is a pioneer, leading researcher and instigator of several important research directions that include: theory and applications of centroidal Voronoi tessellations, analysis and computational methods for the control of fluids, mathematical modeling and numerical studies of superconductivity, and finite element least squares methods, among many others.

Professor Gunzburger's research accomplishments are incredibly broad in both subjects and research methodologies. The topics of his research span a wide spectrum of scientific areas including fluid mechanics, superconductivity, elasticity and

structures, and material science, just to name a few. His research aspects involve modeling, hard and soft analysis, the design of ingenious, efficient and effective computational schemes, rigorous numerical analysis and error estimations, or whatever the problem at hand calls for. The attached list of Professor Gunzburger's publications speaks vividly of his distinguished research career.

Professor Gunzburger has been an enthusiastic promoter and practitioner of global computational mathematics, training and collaborating with students and researchers of different nationalities and of diverse cultural or educational backgrounds. He has constantly and unselfishly contributed to the global dissemination of research in computational and applied mathematics, and his outstanding research leadership and tireless service has positively impacted the worldwide prospering of research in these areas.

The contributing authors of this special issue consist mostly of Professor Gunzburger's former Ph.D students, postdoctoral fellows, and colleagues who at one time or another had the opportunity to collaborate with Professor Gunzburger on various research projects. This collection of research papers is an epitome testimony of Professor Gunzburger's wide scope of research accomplishment and profound influence in the international research community on numerical analysis and on scientific and engineering modeling.

No doubt that great thoughts and ideas will continue to stream out of Professor Gunzburger's beautiful mind, bringing his already distinguished career to an even higher plateau.

I would like to thank Professor Yanping Lin, the Editor-in-Chief of this journal, for his support and painstaking effort in the publication of this special issue. I also would like to thank all contributing authors and referees for their contributions and assistance.

Steve Hou
Iowa State University
Ames, Iowa

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