Dedicated to Professor Max Gunzburger
on the occasion of his 75th 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 seventy-fifth birthday and distinguished career achievements.

Professor Gunzburger is a preminent 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, least-squares finite element methods, uncertainty quantification, and nonlocal modeling and computation, 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 focus involves modeling, hard and soft analysis, the design of ingenious, efficient and effective computational schemes, rigorous numerical analysis and error estimations, and many others.

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 selflessly contributed to the global dissemination of research in computational and applied mathematics. 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 accomplishments and profound influence in the international research community on numerical analysis and scientific and engineering modeling.

There is 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 level.

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Marta D'Elia
Sandia National Laboratories,
Livermore, California

Lili Ju
University of South Carolina,
Columbia, South Carolina

Hyesuk K Lee
Clemson University,
Clemson, South Carolina

Guannan Zhang
Oak Ridge National Laboratory,
Oak Ridge, Tennessee