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Preface

The present issue contains the proceedings of the conference "Wave Propagation: From Electrons to Photonic Crystals and Metamaterials" (WavePro), organized on the occasion of the 60th birthday of Professor Costas M. Soukoulis, as a way to honor him for the numerous and significant contributions he has made to the broad field of wave propagation for more than 30 years.

Costas Soukoulis was born in Agios Ioannis in Corinth and grew up in Athens, Greece, and obtained his B.Sc. in Physics from the University of Athens in 1974. He continued his studies in the U.S., completing his Ph.D. in theoretical condensed matter physics in the Physics Department, University of Chicago in 1978. During his graduate studies, he was a Research and Teaching Assistant, as well as an Associate in the Physics Department and the James Franck Institute of the University of Chicago, respectively. After graduation, he spent three years as a Visiting Assistant Professor in the Department of Physics, University of Virginia, and in 1981 he moved to a Researcher position at the Corporate Research Science Labs of Exxon Research and Engineering Company. Since 1984, he is a Faculty in Department of Physics at Iowa State University (ISU), where he currently is a Distinguished Professor of Liberal Arts and Sciences, and a Senior Scientist for the Ames Laboratory. He is also an Associate Researcher of the Foundation for Research and Technology Hellas (FORTH), in Greece, since the creation of FORTH.

His research interests are in the field of wave propagation in complex media, embracing a wide range of wave propagation phenomena and composite systems, ranging from electron transport and localization in random systems, to electromagnetic and acoustic wave propagation in composite media, including photonic crystals, metamaterials, plasmonic materials, random dielectric media, etc. The impact of Professor Soukoulis' work has been recognized extensively. He is a Fellow of the American Physical Society, the Optical Society of America, and the American Association for the Advancement of Science. He received the ISU Outstanding Achievement in Research in 2001 and the senior Humboldt Research Award in 2002. He was team leader of the group that won the Descartes award for collaborative research on left-handed materials in 2005. Finally, in 2007 he was honored as the first Frances M. Craig Chair in Physics at Iowa State University, the first endowed chair ever awarded to the Department of Physics and Astronomy.

Costas has more than 300 publications in refereed journals, which have received over 20,000 citations, and has given more than 200 invited talks in international conferences. He has organized several conferences, including three NATO Advanced Study Institutes on photonic band gaps (PBGs). He also holds two patents concerning the potential applications of PBG materials. Finally, he has supervised and co-supervised more than 20 graduate students.

The WavePro conference was organized in the Aquilla Rithymna Beach hotel, just outside the city of Rethymnon, Greece, on June 8–11, 2011. More than 85 friends and colleagues of Costas, including the most prominent scientists in the research fields he has contributed throughout his scientific career, participated in the conference. The place of the conference was chosen to be in Greece, Costas' homeland, and, in particular, Crete, close to FORTH, where Costas currently also has a very active research group.

The present volume begins with an article by Prof. E. Economou, a very close friend and collaborator of Costas since the beginning of his career. This article summarizes Costas' research work, pointing out his most significant contributions. It is followed by two articles on electron wave propagation in disordered systems, a subject where Costas has devoted most of the first years of his scientific career. We continue with six articles on photonic crystals, a research area where Costas has worked since 1990, providing some pioneering contributions, such as the first photonic crystal design with a full band gap. The photonic crystals section is followed by nine articles on metamaterials (with the most broad definition of the term, embracing all structured in subwavelength scales materials in microwaves and optics), including negative parameter materials, plasmonic materials, cloaking devices, and acoustic metamaterials. In all these fields, Costas is established as a world renowned leader over the past twenty years. Most of the articles of the issue are contributions by Costas' former students and very close collaborators. They reflect some of the topics highlighted during the conference. This conference was supported by the European Union FET project PHOME (contract 213390).

The great success of the conference would not have been possible without the help of many friends and colleagues, who we would like to acknowledge here. The leading scientists who came from all over the world and contributed to the conference, making it a top scientific event; Rebecca Shivvers, the secretary of the conference and a permanent assistant of Costas throughout his career at Iowa State University; Maria Dimitriadi and George Kenanakis members of FORTH, who helped in the conference organization; George Papatheodorou, a close friend since Costas was at Chicago, who gave a very lively presentation of Costas' life and career; Angela Soukoulis and Athanasia Economou, who helped during the conference festivities; all Costas' former students, close friends, and colleagues, who helped in the organization and made the conference a "family-like" event and, in particular, those who danced alongside Costas until the early morning hours!

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Finally as guest editors, we would like to personally thank Costas, first, for being a dear friend to us, as well as for the professional and personal inspiration and support he has provided us over the years. We can only extend our best wishes to him and hope he will continue with the same drive, optimism, and determination in all aspects of his life for many years to come.

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