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**Tanja Dreischuh
Latchezar Avramov**
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Introduction

The International Conference and School on Quantum Electronics: Laser Physics and Applications (ICSQE) has been held biennially since 1980, by the Institute of Electronics of the Bulgarian Academy of Sciences, without interruption. Our main goals have always been to provide a forum for the exchange of ideas and dissemination of knowledge on the latest developments in the field of lasers and their applications in material processing, laser spectroscopy and metrology, nonlinear optics, biophotonics, and remote sensing. Leading scientists and companies are invited to deliver lectures and demonstrations on the fundamentals of laser physics and applications of lasers as well as the newest results in these areas. The Proceedings have been published since 1996, on the SPIE Digital Library.

The current edition of this scientific event (ICSQE 2018) took place from 17–21 September 2018, in the town of Nessebar, one of the most famous resort towns on the southern Bulgarian Black Sea coast. This year also marked the 55th anniversary of the Institute of Electronics of the Bulgarian Academy of Sciences, whose main scientific activities are in the field of quantum electronics and the interaction of light with various physical environments.

For almost 40 years, ICSQE has provided an excellent opportunity for young researchers to meet internationally recognized scientists to share ideas, review the latest technologies and achievements, discuss future directions, and initiate new collaborations and collaborative research projects. Many former participants have become leading scientists in research institutions and companies around the world. Ninety-four scientists from Armenia, Belarus, Canada, France, Greece, Israel, Italy, Japan, Latvia, Lithuania, Mexico, Poland, the Russian Federation, Spain, Switzerland, the United Kingdom, the United States, and Bulgaria participated in ICSQE 2018. They presented around 100 contributions—invited lectures, oral and poster presentations. The event was supported by SPIE, the Bulgarian National Scientific Fund and Aquachim PLC (Bulgaria) to whom the Organizing Committee expresses its gratitude. To recognize research excellence and scientific presentation abilities, SPIE sponsored the Best Student Paper Awards Competition.

This Proceedings volume contains 55 invited and contributed papers covering the topics of laser-matter interactions, laser spectroscopy and metrology, laser remote sensing and ecology, lasers in biology and medicine, and laser systems and nonlinear optics. All manuscripts submitted were peer-reviewed by experts in the respective fields using the SPIE review process.

ICSQE 2018 owes its success to many enthusiasts. The International Program and Advisory Committees planned and organized the scientific program providing high-quality plenary and invited presentations. The Local Committee organized and ensured the smooth running of the conference. The choice of Nessebar, one

of the oldest cities on the Bulgarian Black Sea coast, greatly enhanced the friendly and stimulating atmosphere of the conference.

The editors of this volume would like to thank all invited speakers and participants for their contribution to the proceedings, the members of the International Advisory and Program Committees for their support, as well as the reviewers for their time and effort to evaluate the manuscripts. We also thank the SPIE staff for their invaluable help. We hope that the readers will find this collection of articles interesting and useful and we would like to invite them to take part in the 21st ICSQE to be held in September 2020.

Tanja Dreischuh
Latchezar Avramov