Introduction to the Issue on Laser Beam Combining and Fiber Laser Systems

The Guest Editors of the IEEE JOURNAL OF SELECTED TOPICS IN QUANTUM ELECTRONICS (JSTQE) are pleased to introduce the second of two issues on high-power fiber lasers. The first issue, published in January/February 2009, concentrated on the fiber lasers themselves. This current issue addresses topics of laser beam combining (of all laser types) as well as various high-power fiber laser systems and applications.

The 27 papers of this issue describe some of the most recent and exciting work in high-power fiber laser systems. We are fortunate to have a diverse set of research topics represented from fundamental theory of laser combining to applications in medical and manufacturing fields. The papers have been organized into five separate areas. The collection starts with four papers on active approaches to coherent beam combining, including issues associated with atmospheric propagation. Next, seven papers address the promise of passive beam combining from both theoretical and experimental perspectives. Rounding out the beam combining techniques, the third grouping contains three papers that detail progress in spectral beam combining.

The remaining papers of this special issue address high-power fiber lasers in a systems context. In the fourth section, we have selected nine papers that describe advances in fiber laser systems, including frequency conversion and fiber laser pump sources. The special issue closes with four papers on applications of high-power fiber laser systems.

The combined papers in these two special issues of JSTQE represent a cross section of the research performed on high-power fiber lasers and demonstrate the high level of activity in this area. We anticipate that this level will be sustained or even increase in the future and hope that these two special editions will serve as a useful reference for further work in this area.

ACKNOWLEDGMENT

Scientific publication is indeed a team effort. These two special issues would not have been possible without the professionalism and dedication of all members of this team. In particular, the editors would like to express their gratitude to all authors, both invited and contributed, for submitting comprehensive and thought-provoking papers. A special thanks goes out to the international peer reviewers who donated their time and skill to maintain the technical quality of this special edition. The coordination of these two issues was handled with skill by Chin Tan-Yan, and the production tasks were ably managed by the IEEE staff. We are profoundly grateful to these individuals for their assistance and support. Finally, the editors would like to thank Dr. R. Shori, former Editor-in-Chief of JSTQE, for his initial support of this project and helpful suggestions.

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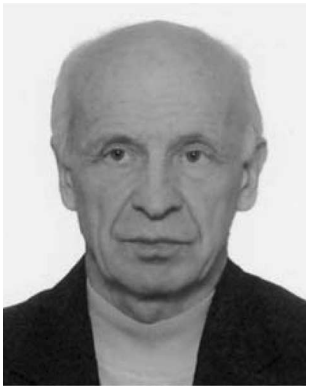

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