Tutorial Speaker	
Full Name	Liang Dong
Affiliation	Clemson Univ.
Presentation Title	Advanced specialty optical fibers and their applications in high-power fiber lasers

Biography

Dr. Dong is currently a professor in the Department of Electrical and Computer Engineering at Clemson University. He is a fellow of OSA and SPIE. Prior to joining Clemson University, he served as senior technical manager at IMRA America Incorporated, R&D director at Lightwaves2020 Incorporated and R&D manager at Corvis Incorporated. He also worked as senior scientist at Corning Incorporated and managed optical fiber fabrication activities at Southampton University. He has 30 years of experience in research and development in photonics and optical fibers. He is the author of a recent book on Fiber Lasers: Basics, Technology and Applications, many invited articles and 5 book chapters, and has given a large number of invited talks at international conferences. He has published ~300 papers in scientific journal and conference proceedings and holds 27 granted patents. He also served as chair/member of many conference committees, associate editor for IEEE Photonics Technology Letters and IEEE Quantum Electronics, and guest editor for Optical Fiber Technology and Fibers. He currently serves as general co-chair for OSA topical meeting on Specialty Optical Fibers (SOF) and Workshop on Specialty Optical Fibers, and as associate editor of Optica.

200 words abstract

Commercial fiber laser market has been experiencing rapid growth from almost nothing in 2000 to multi-billion US dollars today. Much of this growth is by displacing conventional solid-state and gas lasers. Fiber lasers are increasingly important industrial tools for machining, welding, marking, and material processing. Recently, increasing amount of the growth of fiber laser market is from the development of new markets such as dicing and material processing in semiconductor industry and glass machining and processing in electronics industry. A key factor in the rapid market growth is the robust and maintenance-free nature of high-power fiber lasers. Further power scaling of fiber lasers is critical to future market growth by increasing fiber lasers' capability and performance, and to expand fiber lasers' applications in new areas such as science frontiers(particle accelerators, space explorations, satellite launch, etc.) and defense (against drone, mortar, artillery shells, missile defense, etc.). One important key to any further power scaling is advanced fiber designs. I will review issues such as transverse modal instability and thermal lensing, which imposes significant limit in average powers from fiber lasers, as well as recent progress in this area in this tutorial.