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### **Hybrid III-V Silicon Lasers**

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Abstract: A number of important breakthroughs in the past decade have focused attention on Si as a photonic platform. We review here recent progress in this field, focusing on efforts to make lasers, amplifiers, modulators and photodetectors on or in silicon. We also describe optimum quantum well design and distributed feedback cavity design to reduce the threshold and increase the efficiency and power output. The impact active silicon photonic integrated circuits could have on interconnects, telecommunications and on silicon electronics is reviewed. Biography: John Bowers holds the Fred Kavli Chair in Nanotechnology, and is the Director of the Institute for Energy Efficiency and a Professor in the Departments of Electrical and Computer Engineering and Materials at UCSB. He is a cofounder of Aurrion, Aerius Photonics and Calient Networks. Dr. Bowers received his M.S. and Ph.D. degrees from Stanford University and worked for AT&T Bell Laboratories and Honeywell before joining UC Santa Barbara. Dr. Bowers is a member of the National Academy of Engineering and a fellow of the IEEE, OSA and the American Physical Society. He is a recipient of the OSA/IEEE Tyndall Award, the OSA Holonyak Prize, the IEEE LEOS William Streifer Award and the South Coast Business and Technology Entrepreneur of the Year Award. He and coworkers received the EE Times Annual Creativity in Electronics (ACE) Award for Most Promising Technology for the hybrid silicon laser in 2007. Bowers' research is primarily in optoelectronics and photonic integrated circuits. He has published ten book chapters, 600 journal papers, 900 conference papers and has received 54 patents. He has published 180 invited papers and conference papers, and given 16 plenary talks at conferences.

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