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Chun Lei
Kent D. Choquette
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Introduction

On January 25 and 26, 2012, the 16th Vertical Cavity Surface Emitting Lasers Conference was held in San Francisco as part of the SPIE Photonics West Symposium. This proceedings volume contains manuscripts written by most of the conference presenters who discussed their development and research on vertical cavity surface emitting lasers (VCSELs) and applications. During the conference, talks from industry and academia were presented to many interested listeners during seven sessions. This proceedings volume therefore represents the state of both the industrial applications of VCSELs as well device development for future applications.

Data communication application of VCSELs continues to be an application served by VCSELs. Several companies discussed their current VCSEL products that operate at 14Gb/s modulation rate, and the status of the next generation of devices at 20Gb/s and higher rates was described. VCSEL performance and reliability continue to drive the industry, and the demand of optical interconnects continue to challenge the industry. High power VCSEL arrays were reviewed, with demonstrations of solid state laser pumping and other applications discussed. Tunable VCSEL arrays were represented, with both data communication and biological applications described. Finally, the technology development of VCSELs received attention, with both structures and characterization included in several talks.

Overall, the papers presented at the 2012 VCSEL XVI Conference included in these proceedings show the continued advancement of VCSEL optoelectronic technology as well as established and emerging applications.

Kent D. Choquette
Chun Lei

