

SESSION 3: OPTOELECTRONICS TECHNOLOGIES

Chair: Yohei Otoki, *Hitachi Cable, Ltd.*

3

Revolutionary optoelectronic devices, such as high-performance LDs, LEDs and sensors, have been continuously developed in the past several decades, changing our life style. These devices have been realized by hard and continuous efforts for developing new processes and innovative device designs using various compound semiconductor materials. This session introduces recent progress in these areas from four famous invited speakers. Prof. Shuji Nakamura of UCSB talks about the latest progress of GaN LEDs and blue/green LDs grown on nonpolar/semipolar GaN-substrates, demonstrating excellent performance. Prof. John M. Dallesasse from the University of Illinois reviews application of lateral growth oxide layers coming from AlAs/GaAs layers, enabling both current and optical confinement and better reliability. This technology also has been applied to vertical cavity surface emitting laser (VCSEL) diodes. Dr. Klein Johnson from Vixar presents the great evolution of the VCSEL diode using AlGaAs, AlInGaP, InGaAs materials, ranging from infrared to red wavelengths and across applications from well-known communication systems to biomedical. Finally, newly developed deep ultraviolet (250-300 nm) LEDs using AlInGaN materials on AlN substrates are introduced by Prof. Asif Khan of University of South Carolina. He will highlight the latest material and process developments resulting in improve device efficiency and reliability that could enable the replacement of mercury lamps.

