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Green to Orange Low-Threshold II-VI Laser Heterostructures for II-VI/III-N Laser Diode Converters

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Abstract The paper reports on recent progress achieved in the Ioffe Institute, St.Petersburg,in developing the molecular beam epitaxy, design, and parameters of the green-yellow-orange(530-595 nm) low-threshold (0.8-2.5 kW/cm^2, 300K)II-VI laser heterostructures,comprising a CdSe/Zn(Cd)Sequantum dot active region and a graded index superlattice waveguide, grown on GaAs substrates. Implementation of such heterostructures as active elements in II-VI/III-N micro-chip laser converters,implying the optical pumpingof II-VI laser chips by commercial InGaNlaser diodes, allowed one to demonstrate the compact green and yellow laser diodes with the output pulse power in the range of 100-160 mW (τ=0.2μs, 1 kHz) and quantum conversion efficiency from blue to green-yellow up to 14%.

About speaker Graduated from St.Petersburg Electrical-Engineering University in 1983. Since that time has been working in the Ioffe Institute of Russian Academy of Sciences, St.Petersburg, Russia, in the laboratory of the Nobel Prize Winner Prof. ZhoresAlferov. PhD from the Ioffe Institute in 1989 on molecular beam epitaxy (MBE) of ultra-low threshold AlGaAs/GaAsquantum well lasers. Habilitation from the Ioffe Institute in 2000 on MBE of the wide gap II-VI quantum heterostructures for green laser applications.
Current position: Head of the Quantum-size heterostructures Laboratory at the Ioffe Institute, including around 70 researchers. More than 700 publications, among them about 420 articles in refereed journals, 9 book chapters, 2 patents. More than 35 Invited talks at International Conferences. Member of Advisory and Program Committees of several regular International conferences (ICPS, II-VI Compounds, IMBE, IWN, ICNS, E-MRS, ISGN). Teaching activity: Professor of St.Petersburg's Electrical Engineering University and Academic University.
Research interests: MBE growth and properties of epilayers and low-dimensional nanostructures based on narrow gap III-V, III-Nitride and wide gap II-VI compounds for basic research and optoelectronic applications.

4 2 **15:00 16:30**

212

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