

# 2<sup>nd</sup> International Conference and Exhibition on **Lasers, Optics & Photonics**

September 08-10, 2014 Hilton Philadelphia Airport, USA

## Wide band lasing on AlGa<sub>N</sub> on pumping by electron beam and ultraviolet radiation

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Investigations of lasing and luminescence characteristics for Al<sub>x</sub>Ga<sub>1-x</sub>N epitaxial films 0.5-1.2 μm thickness on the sapphire substrate were carried out. The following excitation methods were used: a) by an electron beam generated in an open discharge with the energy 20 keV, and pulse duration 10-100 ns, and current density on samples 1 kA/cm<sup>2</sup>; b) second harmonics and summary frequency of copper vapor laser on wave length 255, 271 and 293 nm. In either case, the luminescence spectra are similar and they have an edge band with x-dependent wavelength from 365 nm to 310 nm and a broad band taking over the whole visible spectral range and near infrared one. Lasing (super radiance) on a broad band was obtained when pumping up with the electron beam in the form of filament generated in an open discharge and UV radiation also in the filament form. The main characteristics of super radiance in the broad band, which can be used for both creation of waveguide lasers in a wide range and lasers with the femto second pulse duration, are presented.

### Biography

P A Bokhan is a Principal Scientist in the Institute of Semiconductor Physics (ISP) Siberian Branch of Russian Academy of Science (SB RAS). From 1975-1972, he was senior Scientist of IAO. Along with his colleagues he developed the technologies to produce a lot of other isotopes of different elements, for example rubidium, calcium, ytterbium and so on. From 2008-2000, he was the Head of Quantum Electronics Division. Currently, he is a Principal Scientist in the Institute of Semiconductor Physics (ISP) Siberian Branch of Russian Academy of Science (SB RAS). He is actively involved in the field of generation of powerful electric and electron beam pulses with subnanosecond rise time at high repetition rate (up to 50kHz), and pumping different lasers, especially semiconductor lasers and metal vapour lasers since 2008. His fields of investigations are: physics of gaseous and semiconductor laser, laser isotope separation, physics of gas discharge, electron emission from cold cathodes, atomic collisions and fast processes in plasma physics.

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