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*Structural and Optical Studies of GaBixAs<sub>1-x</sub> Grown by Molecular Beam Epitaxy on (311)B and (001) GaAs Substrates*

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Abstract: Recently GaBixAs<sub>1-x</sub> alloys are attracting a considerable deal of attention due to their unique properties and their potential in photovoltaic, optoelectronic, terahertz and spintronics applications. An important degree of freedom in the epitaxy of III-V semiconductors is the growth of layers on high Miller index surfaces, i.e. surfaces oriented differently from the usual (100) orientation. There are several interesting and unusual aspects of non-(100) oriented semiconductor structures related to growth, impurity incorporation, electronic properties (including mobility enhancement of two-dimensional hole gases) and piezoelectric effects.

In this work we will report on the Molecular Beam Epitaxy (MBE) growth of GaBixAs<sub>1-x</sub> epilayers deposited on (311)B and (001) GaAs substrates with different As fluxes. The Photoluminescence (PL) and High Resolution X-ray Diffraction (HRXRD) data obtained from our GaAsBi epilayers indicates that under near-stoichiometric conditions the bismuth incorporation is higher for (311)B growth than for (001) growth. The influence of post-growth annealing on the microstructure and PL will be also reported.