APPLICATION NOTE

HIGH REFLECTIVITY OF AlAsSb/GaSb DBRs

Compact 21 Research System

High quality of Distributed Bragg Reflector (DBR) structures are key parts in numerous active and passive optoelectronic devices such as Vertical Cavity Surface Emitting Laser (VCSEL).

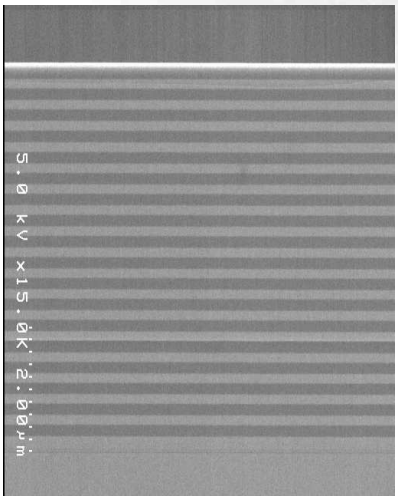
DBR are made up of alternate layers of high and low refractive index materials, their reflectivity being dependant on the number of layers and on the refractive index difference between materials. Therefore DBR epitaxial growth must be performed with an accurate control of thickness and composition.

This Application Note presents GaAlAsSb based DBR, grown at the CEM2 Laboratory in Université Montpellier 2, France. This laboratory is involved in the growth of GaSb based, 2–3 µm range, EEL and VCSEL, for gas spectroscopy, free space optical communication…applications.

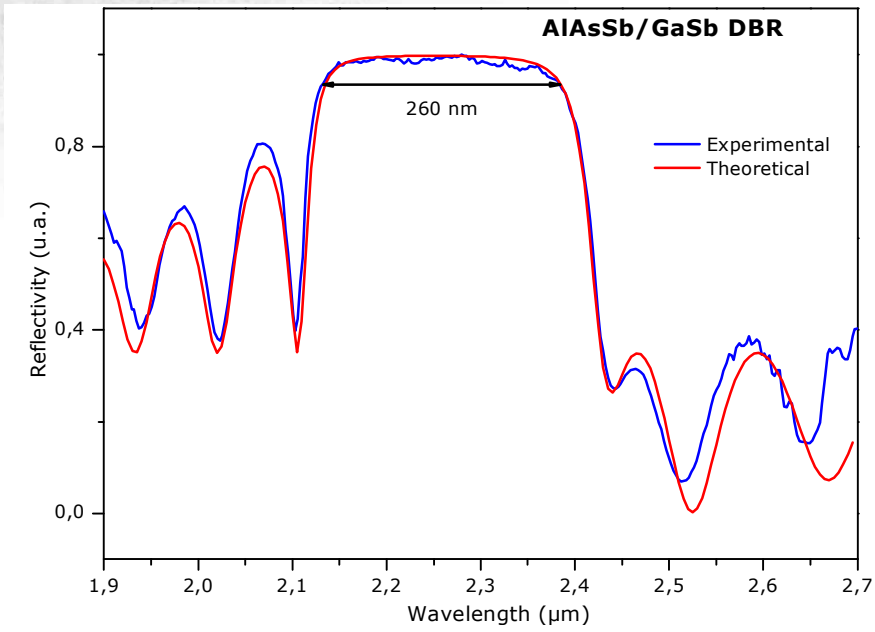
Results

17 periods, AlAsSb/GaSb Bragg mirrors, centered at 2.25 µm were grown on the Riber Compact 21 research system.

- SEM cross section of the DBR stack shows dark and light areas that are related to AlAsSb and GaSb respectively showing an homogeneous material and sharp interfaces.
- Reflectivity measurements of the DBR exhibit a maximum reflectivity of **99.6%** with a large stopband of **260 nm** demonstrating the excellent stability of flux sources.



SEM picture



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