

## **The GaSb-based Y-branch DBR and photonic crystal lasers.**

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We report on development of the mid-infrared antimonide based laser technology targeting dual wavelength operation for intra-cavity difference frequency generation. The devices utilize Y-branch architecture with high order DBR reflectors controlling the laser emission spectrum. The device active region contain asymmetric tunnel coupled quantum well with built in resonant second order nonlinearity. The epitaxially regrown photonic crystal surface emitting GaSb-based lasers will be demonstrated.