Hybrid III-V on Si grating as a broadband reflector and a high-Q resonator - DTU Orbit (07/12/2018)

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Hybrid grating (HG) with a high-refractive-index cap layer added onto a high contrast grating (HCG), can provide a high reflectance close 100 % over a broader wavelength range than HCGs, or work as a ultrahigh quality (Q) factor resonator. The reflection and resonance properties of HGs have been investigated and the mechanisms leading to these properties are discussed. A HG reflector sample integrating a III-V cap layer with InGaAlAs quantum wells onto a Si grating has been fabricated and its reflection property has been characterized. The HG-based lasers have a promising prospect for silicon photonics light source or high-speed laser applications.

General information
State: Published
Organisations: Department of Photonics Engineering, Nanophotonics Theory and Signal Processing
Contributors: Chung, I., Taghizadeh, A., Park, G. C.
Number of pages: 16
Publication date: 2016

Host publication information
Title of host publication: Proceedings of SPIE
Volume: 9757
Publisher: SPIE - International Society for Optical Engineering
Article number: 97570A
Keywords: Silicon photonics, HCG, Subwavelength grating, Hybrid, Optical interconnects, Optical interconnection
DOI:
10.1117/12.2212341
Source: PublicationPreSubmission
Source-ID: 122847970
Research output: Research - peer-review › Article in proceedings – Annual report year: 2016