Elizaveta Semenova - DTU Orbit (29/01/2018)

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Nanophotonic Devices

Centre of Excellence for Silicon Photonics for Optical Communications

Publications:

A valence force field-Monte Carlo algorithm for quantum dot growth modeling
Publication: Research - peer-review › Article in proceedings – Annual report year: 2017

Characterization and optimization of a high-efficiency AlGaAs-On-Insulator-based wavelength converter for 64- and 256-QAM signals
Publication: Research - peer-review › Journal article – Annual report year: 2017

Demonstration of a self-pulsing photonic crystal Fano laser
Publication: Research - peer-review › Journal article – Annual report year: 2017

Enhancing Optical Forces in InP-Based Waveguides
Panah, M. E. A., Semenova, E. & Lavrinenko, A. 2017 In : Scientific Reports. 7, 1, 8 p., 3106
Publication: Research - peer-review › Journal article – Annual report year: 2017

Experimental demonstration of a Fano laser based on photonic crystals
Publication: Research - peer-review › Article in proceedings – Annual report year: 2017

Fabrication and experimental demonstration of photonic crystal laser with buried heterostructure
Publication: Research - peer-review › Article in proceedings – Annual report year: 2017

High Q gallium nitride microring resonators
Publication: Research - peer-review › Conference abstract in proceedings – Annual report year: 2017

Hybrid Si-on-chip Lasers with Nano Structures
Publication: Research - peer-review › Conference abstract in proceedings – Annual report year: 2017

Lasers, switches and non-reciprocal elements based on photonic crystal Fano resonances
Mid-IR optical properties of silicon doped InP

On the high characteristic temperature of an InAs/GaAs/InGaAsP QD laser with an emission wavelength of ~1.5 μm on an InP substrate

Photonic crystal Fano lasers and Fano switches

Photonic crystal Fano resonances for realizing optical switches, lasers and non-reciprocal elements

Specific features of waveguide recombination in laser structures with asymmetric barrier layers

Towards Ultra-High Q Microresonators in High-Index Contrast AlGaAs-On-Insulator

1.5 μm InAs/InGaAsP/InP quantum dot laser with improved temperature stability

An Ultra-Efficient Nonlinear Platform: AlGaAs-On-Insulator

Broadband and Efficient Dual-Pump Four-Wave Mixing in AlGaAs-On-Insulator Nano-Waveguide

Broadband and efficient dual-pump four-wave-mixing in AlGaAs-on-insulator nano-waveguides
Threshold Characteristics of Slow-Light Photonic Crystal Lasers
Publication: Research - peer-review › Journal article – Annual report year: 2016

Ultrahigh-speed Si-integrated on-chip laser with tailored dynamic characteristics
Park, G. C., Xue, W., Piels, M., Zibar, D., Mark, J., Semenova, E. & Chung, I-S. 2016 In : Scientific Reports. 6, 38801
Publication: Research - peer-review › Journal article – Annual report year: 2016

Vertical-cavity laser with a novel grating mirror
Publication: Research › Ph.D. thesis – Annual report year: 2016

A Highly Efficient Nonlinear Platform: AlGaAs-On-Insulator
Publication: Research - peer-review › Conference abstract in proceedings – Annual report year: 2015

AlGaAs-On-Insulator Nanowire with 750 nm FWM Bandwidth, -9 dB CW Conversion Efficiency, and Ultrafast Operation Enabling Record Tbaud Wavelength Conversion
Publication: Research - peer-review › Article in proceedings – Annual report year: 2015

AlGaAs-On-Insulator nonlinear photonics
Pu, M., Ottaviano, L., Semenova, E. & Yvind, K. 2015
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2015

Diode lasers with asymmetric barriers for 850 nm spectral range: experimental studies of power characteristics
Publication: Research - peer-review › Journal article – Annual report year: 2015

Highly Efficient Four-Wave Mixing in an AlGaAs-On-Insulator (AlGaAsOI) Nano-Waveguide
Publication: Research - peer-review › Article in proceedings – Annual report year: 2015

Highly Sensitive Photonic Crystal Cavity Laser Noise Measurements using Bayesian Filtering
Publication: Research - peer-review › Article in proceedings – Annual report year: 2015

Hybrid III-V/SOI single-mode vertical-cavity laser with in-plane emission into a silicon waveguide
Publication: Research - peer-review › Article in proceedings – Annual report year: 2015

Hybrid vertical-cavity laser with lateral emission into a silicon waveguide
Publication: Research - peer-review › Journal article – Annual report year: 2015
III-V/SOI vertical cavity laser structure for 120 Gbit/s speed
Publication: Research - peer-review › Article in proceedings – Annual report year: 2015

III-V/SOI vertical cavity laser with in-plane output into a Si waveguide
Publication: Research - peer-review › Article in proceedings – Annual report year: 2015

Improvement of power characteristics in 850 nm quantum well laser with asymmetric barriers
Publication: Research - peer-review › Article in proceedings – Annual report year: 2015

On the optimization of asymmetric barrier layers in InAlGaAs/AlGaAs laser heterostructures on GaAs substrates
Publication: Research - peer-review › Journal article – Annual report year: 2015

Overcoming doping limits in MOVPE grown n-doped InP for plasmonic applications
Publication: Research - peer-review › Article in proceedings – Annual report year: 2015

Slow-light effects in photonic crystal membrane lasers
Publication: Research - peer-review › Article in proceedings – Annual report year: 2015

Suppression of sublinearity of light–current curve in 850 nm quantum well laser with asymmetric barrier layers
Publication: Research - peer-review › Journal article – Annual report year: 2015

Tailoring quantum structures for active photonic crystals
Publication: Research › Ph.D. thesis – Annual report year: 2015

The effect of asymmetric barrier layers in the waveguide region on power characteristics of QW lasers
Publication: Research - peer-review › Journal article – Annual report year: 2015

Thermal analysis of line-defect photonic crystal lasers
Publication: Research - peer-review › Journal article – Annual report year: 2015

Publication: Research - peer-review › Article in proceedings – Annual report year: 2015

Butt-joint Integration of active optical components based on InP/AlInGaAsP alloys
Crystallographic dependent in-situ CBr4 selective nano-area etching and local regrowth of InP/InGaAs by MOVPE
In : Journal of Crystal Growth. 406, p. 111-115

Epitaxial growth of quantum dots on InP for device applications operating at the 1.55 μm wavelength range
In : Proceedings of SPIE, the International Society for Optical Engineering. 8996, 9 p., 899606

High-quality MOVPE butt-joint integration of InP/AlGaNAs/InGaAsP-based all-active optical components
In : Journal of Crystal Growth. 243, p. 243–248

Improvement of light-current characteristic linearity in a quantum well laser with asymmetric barriers

Material Engineering for Monolithic Semiconductor Mode-Locked Lasers
Kulkova, I., Yvind, K., Semenova, E. & Larsson, D. 2014
Technical University of Denmark (DTU). 135 p.

Nonplanar nanoselective area growth of InGaAs/InP
In : Proceedings of SPIE, the International Society for Optical Engineering. 8996, 7 p., 899608

Slow-light-enhanced gain in active photonic crystal waveguides
In : Nature Communications. 5, 7 p., 5039

1060-nm Tunable Monolithic High Index Contrast Subwavelength Grating VCSEL
Ansbæk, T., Chung, I-S., Semenova, E. & Yvind, K. 2013
In : I E E E Photonics Technology Letters. 25, 4, p. 365-367

Crystallographic dependence of the lateral undercut wet etch rate of AlxIn1-xP in diluted HCl for III-V sacrificial release
Ansbæk, T., Semenova, E., Yvind, K. & Hansen, O. 2013

Hybrid III-V-on-Si Vertical Cavity laser for Optical Interconnects
Park, G. C., Semenova, E. & Chung, I-S. 2013

Resonant MEMS tunable VCSEL
In : I E E E Journal on Selected Topics in Quantum Electronics. 19, 4, 6 p., 1702306

Publication: Research - peer-review › Article in proceedings – Annual report year: 2014

Publication: Research - peer-review › Journal article – Annual report year: 2014


**Ultrahigh-speed hybrid laser for silicon photonic integrated chips**
Publication: Research - peer-review › Conference abstract in proceedings – Annual report year: 2014

**41 GHz and 10.6 GHz low threshold and low noise InAs/InP quantum dash two-section mode-locked lasers in L band**
Publication: Research - peer-review › Journal article – Annual report year: 2012

**Effect of Asymmetric Barrier Layers in the Waveguide Region on the Temperature Characteristics of QuantumWell Lasers**
Publication: Research - peer-review › Journal article – Annual report year: 2012

**Enhanced Gain in Slow-Light Photonic Crystal Waveguides**
Publication: Research - peer-review › Article in proceedings – Annual report year: 2012

**Individual optimization of InAlGaAsP-InP sections for 1.55-μm passively mode-locked lasers**
Publication: Research - peer-review › Article in proceedings – Annual report year: 2012

**Nano-selective area growth of InGaAs/InP using CBr4 in situ etching**
Publication: Research - peer-review › Article in proceedings – Annual report year: 2012

**Slow-light enhancement of spontaneous emission in active photonic crystal waveguides**
Publication: Research - peer-review › Conference article – Annual report year: 2012

**Active III-V Semiconductor Photonic Crystal Waveguides**
Publication: Research - peer-review › Article in proceedings – Annual report year: 2011

**Enhanced Gain in Slow-Light Photonic Crystal Waveguides with Embedded Quantum Dots**
Publication: Research - peer-review › Article in proceedings – Annual report year: 2011
InAs/InGaAsP Quantum Dots Emitting at 1.5 μm for Applications in Lasers
Publication: Research - peer-review › Article in proceedings – Annual report year: 2011

Investigating the chemical and morphological evolution of GaAs capped InAs/InP quantum dots emitting at 1.5μm using aberration-corrected scanning transmission electron microscopy
Publication: Research - peer-review › Journal article – Annual report year: 2011

Metal organic vapor-phase epitaxy of InAs/InGaAsP quantum dots for laser applications at 1.5 μm
Publication: Research - peer-review › Journal article – Annual report year: 2011

Quantitative strain mapping of InAs/InP quantum dots with 1 nm spatial resolution using dark field electron holography
Publication: Research - peer-review › Journal article – Annual report year: 2011

Towards quantitative three-dimensional characterisation of buried InAs quantum dots
Publication: Research - peer-review › Conference article – Annual report year: 2011

Towards quantitative three-dimensional characterisation of InAs quantum dots
Publication: Research - peer-review › Conference abstract in proceedings – Annual report year: 2011

10-GHz 1.59-μm quantum dash passively mode-locked two-section lasers
Dontabactouny, M., Rosenberg, C., Semenova, E., Larsson, D., Yvind, K., Piron, R., Grillot, F., Dehaese, O., Chevalier, N. & Loualiche, S. 2010 In : Proceedings of SPIE--the international society for optical engineering. 7720, p. 77201A
Publication: Research - peer-review › Conference article – Annual report year: 2011

Lambda shifted photonic crystal cavity laser
Publication: Research - peer-review › Journal article – Annual report year: 2010

Quarter-lambda-shifted photonic crystal lasers
Publication: Research - peer-review › Poster – Annual report year: 2010

Projects:

III-V Nanowire Selective Area MOVPE Growth for High Efficiency Solar Cell
Lebedkina, E., Semenova, E. & Canulescu, S.
01/01/2018 → 31/12/2020
Project: PhD

Tailored nanoscale optical materials and devices
Sakanas, A., Yvind, K., Mørk, J. & Semenova, E.
Developing of Superior Quantum Dot Gain Material for 1.5-1.6 um Wavelenght Range
Shikin, A., Semenova, E., Almdal, K. & Yvind, K.
15/03/2015 → 14/03/2018
Project: PhD

Developing of III-V epitaxy of highly efficient quantum dot gain material to the silicon platform
Viazmitinov, D., Semenova, E., Frandsen, L. H. & Yvind, K.
01/10/2014 → 31/03/2018
Project: PhD

Block Copolymer Precursors for Chemical Nanopatterning of Graphene
Wang, Z., Ndoni, S., Almdal, K., Semenova, E., Jannasch, P. & Posselt, D.
15/07/2014 → 07/12/2017
Project: PhD

Design and fabrication of mid-infrared plasmonic materials based on highly doped III-V semiconductors
Panah, M. E. A., Lavrinenko, A., Semenova, E., Yvind, K., Bordo, V. G. & Engheta, N.
15/02/2014 → 23/08/2017
Project: PhD

Quantum dot Energy level Engineering for laser applications on InP and Si platforms
01/06/2013 → 31/08/2017
Project

Vertical-cavity laser with a novel grating mirror
Park, G. C., Chung, I., Semenova, E., Frandsen, L. H., Heck, M. & Kapon, E.
15/02/2013 → 15/06/2016
Project: PhD

QDLaser : Development of novel quantum dot based materials for compact laser devices for potential
Mørk, J. & Semenova, E.
01/01/2011 → 31/12/2012
Project

Nanoscale semiconductor optical devices
Kuznetsova, N., Yvind, K., Semenova, E., Malureanu, R., Cirlin, G. & Kardynal, B.
01/09/2010 → 18/06/2015
Project: PhD

Femtosecond semiconductor lasers
Kulkova, I., Yvind, K., Larsson, D., Semenova, E., Tafur Monroy, I., Avrutin, E. & Decobert, J.
01/08/2010 → 24/09/2014
Project: PhD

Femtosecond semiconductor LASers Harnessed
Yvind, K., Kim, J. M., Semenova, E., Mørk, J., Hvam, J. M. & Penty, R.
01/09/2009 → 31/10/2012
Project

Governing the speed of light
Mørk, J., Gregersen, N., Yvind, K., Kristensen, P. T., Hansen, P. L., Semenova, E., Xue, W., Pu, M. & Larsson, D.
Activities:

Presentation title: "A valence force field-Monte Carlo algorithm for quantum dot growth modeling",
Kadkhodazadeh, S. (Other), Semenova, E. (Other), Willatzen, M. (Other), Alessandro Pecchia (Other), Matthias Auf de Maur (Other), Daniele Barettin (Speaker)
24 Jul 2017 → 28 Jul 2017
Activity: Talks and presentations › Conference presentations