Elizaveta Semenova - DTU Orbit (18/10/2019)

Elizaveta Semenova

Department of Photonics Engineering - Senior Researcher

Nanophotonic Devices

Centre of Excellence for Silicon Photonics for Optical Communications

Person: VIP

Research outputs:

Semiconductor Fano Lasers
Research output: Contribution to journal › Journal article – Annual report year: 2019 › Research › peer-review

Comparison of processing-induced deformations of InP bonded to Si determined by e-beam metrology: Direct vs. adhesive bonding
Research output: Contribution to journal › Journal article – Annual report year: 2019 › Research › peer-review

High-confinement gallium nitride-on-sapphire waveguides for integrated nonlinear photonics
Research output: Contribution to journal › Journal article – Annual report year: 2019 › Research › peer-review

Characterization and Optimization of Four-Wave-Mixing Wavelength Conversion System
Research output: Contribution to journal › Journal article – Annual report year: 2019 › Research › peer-review

Synthesis and systematic optical investigation of selective area droplet epitaxy of InAs/InP quantum dots assisted by block copolymer lithography
Research output: Contribution to journal › Journal article – Annual report year: 2019 › Research › peer-review

Tunable MEMS VCSEL on Silicon Substrate
Research output: Contribution to journal › Journal article – Annual report year: 2019 › Research › peer-review

Wavelength Conversion of 10 Gbit/s Data from 2000 to 1255 nm using an AlGaAsOI Nanowaveguide and a Continuous-Wave Pump in the C Band
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2019 › Research › peer-review

High-Quality-Factor AlGaAs-On-Sapphire Microring Resonators
Research output: Contribution to journal › Journal article – Annual report year: 2018 › Research › peer-review
Quantifying non-uniform InP-on-Si wafer expansion with a sub-50 nm precision using E-beam metrology
Research output: Contribution to conference › Conference abstract for conference – Annual report year: 2019 › Research › peer-review

Signal-to-Idler Conversion Penalty in AlGaAs-on-Insulator Wavelength Converter
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2018 › Research › peer-review

Single-source chip-based frequency comb enabling extreme parallel data transmission
Research output: Contribution to journal › Journal article – Annual report year: 2018 › Research › peer-review

SiNOI and AlGaAs-on-SOI nonlinear circuits for continuum generation in Si photonics
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2018 › Research › peer-review

TKD characterization of low dimensional materials
Research output: Contribution to conference › Conference abstract for conference – Annual report year: 2018 › Research › peer-review

Transmission Kikuchi Diffraction characterization of low dimensional materials
Research output: Contribution to conference › Conference abstract for conference – Annual report year: 2018 › Research › peer-review

Ultra-Efficient and Broadband Nonlinear AlGaAs-on-Insulator Chip for Low-Power Optical Signal Processing
Research output: Contribution to journal › Journal article – Annual report year: 2018 › Research › peer-review

Wavelength tunable MEMS VCSELs for OCT imaging
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2018 › Research › peer-review

An ultra-efficient nonlinear planar integrated platform for optical signal processing and generation
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2018 › Research › peer-review
A valence force field-Monte Carlo algorithm for quantum dot growth modeling
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2017 › Research › peer-review

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

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

Enhancing Optical Forces in InP-Based Waveguides
Research output: Contribution to journal › Journal article – Annual report year: 2017 › Research › peer-review

Experimental demonstration of a Fano laser based on photonic crystals
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2017 › Research › peer-review

Fabrication and experimental demonstration of photonic crystal laser with buried heterostructure
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2017 › Research › peer-review

High Q gallium nitride microring resonators
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2017 › Research › peer-review

Hybrid Si-on-chip Lasers with Nano Structures
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2017 › Research › peer-review

Lasers, switches and non-reciprocal elements based on photonic crystal Fano resonances
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2017 › Research › peer-review

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


Photonic Crystal with Buried Heterostructure Platform for Laser Devices Directly Bonded to Si


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


Towards Polarization-Independent Four-Wave Mixing in Dispersion Engineered AlGaAs-on-Insulator Nano-Waveguide


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

Broadband and efficient dual-pump four-wave-mixing in AlGaAs-on-insulator nano-waveguides

Characterization of a Wavelength Converter for 256-QAM Signals Based on an AlGaAs-On-Insulator Nano-waveguide

Efficient frequency comb generation in AlGaAs-on-insulator

Highly doped InP as a low loss plasmonic material for mid-IR region

Low-loss high-confinement waveguides and microring resonators in AlGaAs-on-insulator

Nonlinear Optics in AlGaAs on Insulator

Optically pumped 1550nm wavelength tunable MEMS VCSEL

Phase-sensitive Four-wave Mixing in AlGaAs-on-Insulator Nano-waveguides

Silicon doped InP as an alternative plasmonic material for mid-infrared

Single-Source AlGaAs Frequency Comb Transmitter for 661 Tbit/s Data Transmission in a 30-core Fiber
Supercontinuum Generation in AlGaAs-On-Insulator Nano-Waveguide at Telecom Wavelengths
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2016 › Research › peer-review

Surface Plasmons on Highly Doped InP
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2016 › Research › peer-review

Threshold Characteristics of Slow-Light Photonic Crystal Lasers
Research output: Contribution to journal › Journal article – Annual report year: 2016 › Research › peer-review

Ultrahigh-speed Si-integrated on-chip laser with tailored dynamic characteristics
Research output: Contribution to journal › Journal article – Annual report year: 2016 › Research › peer-review

A Highly Efficient Nonlinear Platform: AlGaAs-On-Insulator
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2015 › Research › peer-review

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

AlGaAs-On-Insulator nonlinear photonics
Research output: Contribution to conference › Conference abstract for conference – Annual report year: 2015 › Research › peer-review

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

Highly Efficient Four-Wave Mixing in an AlGaAs-On-Insulator (AlGaAsOI) Nano-Waveguide
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2015 › Research › peer-review

Highly Sensitive Photonic Crystal Cavity Laser Noise Measurements using Bayesian Filtering
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2015 › Research › peer-review
Hybrid III-V/SOI single-mode vertical-cavity laser with in-plane emission into a silicon waveguide
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2015 › Research › peer-review

Hybrid vertical-cavity laser with lateral emission into a silicon waveguide
Research output: Contribution to journal › Journal article – Annual report year: 2015 › Research › peer-review

III-V/SOI vertical cavity laser structure for 120 Gbit/s speed
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2015 › Research › peer-review

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

Improvement of power characteristics in 850 nm quantum well laser with asymmetric barriers
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2015 › Research › peer-review

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

Overcoming doping limits in MOVPE grown n-doped InP for plasmonic applications
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2015 › Research › peer-review

Slow-light effects in photonic crystal membrane lasers
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2015 › Research › peer-review

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

The effect of asymmetric barrier layers in the waveguide region on power characteristics of QW lasers
Research output: Contribution to journal › Journal article – Annual report year: 2015 › Research › peer-review
Thermal analysis of line-defect photonic crystal lasers
Research output: Contribution to journal › Journal article – Annual report year: 2015 › Research › peer-review

Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2015 › Research › peer-review

 Butt-joint integration of active optical components based on InP/AlInGaAsP alloys
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2014 › Research › peer-review

Crystallographic dependent in-situ CBr4 selective nano-area etching and local regrowth of InP/InGaAs by MOVPE
Research output: Contribution to journal › Journal article – Annual report year: 2014 › Research › peer-review

Epitaxial growth of quantum dots on InP for device applications operating at the 1.55 μm wavelength range
Research output: Contribution to journal › Conference article – Annual report year: 2014 › Research › peer-review

High-quality MOVPE butt-joint integration of InP/AlInGaAs/InGaAsP-based all-active optical components
Research output: Contribution to journal › Journal article – Annual report year: 2014 › Research › peer-review

Improvement of light-current characteristic linearity in a quantum well laser with asymmetric barriers
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2014 › Research › peer-review

Nonplanar nanoselective area growth of InGaAs/InP
Research output: Contribution to journal › Journal article – Annual report year: 2014 › Research › peer-review

Slow-light-enhanced gain in active photonic crystal waveguides
Research output: Contribution to journal › Journal article – Annual report year: 2014 › Research › peer-review

1060-nm Tunable Monolithic High Index Contrast Subwavelength Grating VCSEL
Research output: Contribution to journal › Journal article – Annual report year: 2013 › Research › peer-review

Crystallographic dependence of the lateral undercut wet etch rate of AlxInyGa1-x-yP in diluted HCl for III-V sacrificial release
Research output: Contribution to journal › Journal article – Annual report year: 2013 › Research › peer-review
Hybrid III-V-on-Si Vertical Cavity laser for Optical Interconnects
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2014 › Research › peer-review

Resonant MEMS tunable VCSEL
Research output: Contribution to journal › Journal article – Annual report year: 2013 › Research › peer-review

Ultrahigh-speed hybrid laser for silicon photonic integrated chips
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2014 › Research › peer-review

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

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

Enhanced Gain in Photonic Crystal Amplifiers
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2012 › Research › peer-review

High-speed photodetectors in a photonic crystal platform
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2012 › Research › peer-review

Improvement of temperature-stability in a quantum well laser with asymmetric barrier layers
Research output: Contribution to journal › Journal article – Annual report year: 2012 › Research › peer-review

Individual optimization of InAlGaAsP-InP sections for 1.55-μm passively mode-locked lasers
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2012 › Research › peer-review

Nano-selective area growth of InGaAs/InP using CBr4 insitu etching
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2012 › Research › peer-review
Slow-light enhancement of spontaneous emission in active photonic crystal waveguides
Research output: Contribution to journal › Conference article – Annual report year: 2012 › Research › peer-review

Active III-V Semiconductor Photonic Crystal Waveguides
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2011 › Research › peer-review

Enhanced Gain in Slow-Light Photonic Crystal Waveguides with Embedded Quantum Dots
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2011 › Research › peer-review

InAs/InGaAsP Quantum Dots Emitting at 1.5 μm for Applications in Lasers
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2011 › Research › peer-review

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

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

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

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

Towards quantitative three-dimensional characterisation of InAs quantum dots
Research output: Chapter in Book/Report/Conference proceeding › Conference abstract in proceedings – Annual report year: 2011 › Research › peer-review

10-GHz 1.59-μm quantum dash passively mode-locked two-section lasers
Research output: Contribution to journal › Conference article – Annual report year: 2011 › Research › peer-review
Lambda shifted photonic crystal cavity laser
Research output: Contribution to journal › Journal article – Annual report year: 2010 › Research › peer-review

Quarter-lambda-shifted photonic crystal lasers
Research output: Contribution to conference › Poster – Annual report year: 2010 › Research › peer-review

Projects:

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

Tailored nanoscale optical materials and devices
Sakanas, A., Yvind, K., Mørk, J., Semenova, E., Stobbe, S., Moselund, K. E. & Reithmaier, J. P.
Samfinansierede - Virksomhed
01/08/2015 → 08/05/2019
Project: PhD

Developing of III-V epitaxy of highly efficient quantum dot gain material to the silicon platform
Viazmitinov, D., Semenova, E., Yvind, K., Hansen, O., Hannappel, T., Tchernycheva, M. & Frandsen, L. H.
Eksternt finansieret virksomhed
01/10/2014 → 30/06/2018
Project: PhD

Block Copolymer Precursors for Chemical Nanopatterning of Graphene
Wang, Z., Almdal, K., Semenova, E., Jannasch, P., Posselt, D. & Ndoni, S.
Samfinansieret - Andet
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., Laurynenka, A., Semenova, E., Yvind, K., Engheta, N. & Bordo, V. G.
Technical University of Denmark
15/02/2014 → 23/08/2017
Project: PhD

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

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

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

QUEENs: QUantum dot Energy level Engineering for laser applicatioNs on InP and Si platforms
01/06/2013 → 31/08/2017
Project: Research

GOSPEL: 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.
Forsk. EU - Rammeprogram
01/09/2008 → 31/12/2011
Project: Research

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

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

Activities:

Selective Area Growth of GaAs Nanowires on Silicon for photovoltaic applications
Elizaveta Lebedkina (Speaker), Dmitrii Viazmitinov (Other), Stela Canulescu (Other), Elizaveta Semenova (Other)
24 Sep 2018 → 27 Sep 2018
Activity: Talks and presentations › Conference presentations

Epitaxy of Quantum Dots operating in the 1.55 µm wavelength range for device applications
Elizaveta Semenova (Invited speaker)
17 Sep 2018 → 21 Sep 2018
Activity: Talks and presentations › Conference presentations

International Conference on Metamaterials and Nanophotonics
Elizaveta Semenova (Participant)
17 Sep 2018 → 21 Sep 2018
Activity: Attending an event › Participating in or organising a conference

Epitaxial growth of GaAs Nanowires on Silicon substrate for photovoltaic applications
Elizaveta Lebedkina (Speaker), Dmitrii Viazmitinov (Other), Stela Canulescu (Other), Elizaveta Semenova (Other)
12 Sep 2018 → 14 Sep 2018
Activity: Talks and presentations › Conference presentations

Epitaxial methods of quantum dot growth for 1550 nm operating wavelength
Elizaveta Lebedkina (Speaker), Artem Shikin (Other), Shima Kadkhodazadeh (Other), Sokol Ndoni (Other), Kristoffer Almdal (Other), Lior Asor (Other), Uri Banin (Other), Czibor Ciostek (Other), Marcin Syperek (Other), Kresten Yvind (Lecturer), Elizaveta Semenova (Other)
3 Jun 2018 → 8 Jun 2018
Activity: Talks and presentations › Conference presentations
Monolithic integration of immersed InP on Si
Dmitrii Viazmitinov (Speaker), Lars Hagedorn Frandsen (Other), Kresten Yvind (Other), Elizaveta Semenova (Other)
3 Jun 2018 → 8 Jun 2018
Activity: Talks and presentations › Conference presentations

Tunable MEMS VCSEL on silicon substrate
Hitesh Kumar Sahoo (Speaker), Thor Ansbæk (Speaker), Luisa Ottaviano (Speaker), Elizaveta Semenova (Speaker), Fedor I. Zubov (Guest lecturer), Ole Hansen (Speaker), Kresten Yvind (Speaker)
12 Apr 2018 → 13 Apr 2018
Activity: Talks and presentations › Conference presentations

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