Sanshui Xiao - DTU Orbit (20/01/2019)

Xiao, Sanshui

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Department of Photonics Engineering - Associate Professor
Structured Electromagnetic Materials
Center for Nanostructured Graphene

Research outputs:

Tunable terahertz broadband absorber based on a composite structure of graphene multilayer and silicon strip array
Research output: Research - peer-review › Journal article – Annual report year: 2018

Hybridization-induced dual-band tunable graphene metamaterials for sensing
Research output: Research - peer-review › Journal article – Annual report year: 2018

Advances on silicon-based integrated microwave photonics
Research output: Research - peer-review › Article in proceedings – Annual report year: 2018

Efficient Thermal Tuning Employing Metallic Microheater With Slow Light Effect
Research output: Research - peer-review › Journal article – Annual report year: 2018

Graphene-based integrated optoelectronic devices
Xiao, S. 2018 1 p.
Research output: Research - peer-review › Conference abstract for conference – Annual report year: 2018

Graphene Nanophotonics and Optoelectronic Applications
Xiao, S. 2018
Research output: Research - peer-review › Conference abstract for conference – Annual report year: 2018

High-efficiency tunable T-shaped beam splitter based on one-way waveguide
Hong, L., Xiao, S., Deng, X., Pu, R. & Shen, L. 2018 In : Journal of Optics. 20, 12, 7 p., 125002
Research output: Research - peer-review › Journal article – Annual report year: 2018

Multiple evidence for room-temperature strong coupling in a hybrid WS2/gold nanodisk-system
Research output: Research - peer-review › Conference abstract for conference – Annual report year: 2018

Nanoplasmonics of 2D Materials in Engineered Nanostructures
Research output: Research - peer-review › Conference abstract for conference – Annual report year: 2018

Phonon-electron coupling in luminescent defects in hexagonal boron nitride
Research output: Research - peer-review › Poster – Annual report year: 2018
Plasmon-exciton polaritons in two-dimensional semiconductor/metal interfaces
Research output: Research - peer-review › Journal article – Annual report year: 2018

Tunable optical delay line based on integrated grating-assisted contradirectional couplers
Xu, W., Yuhe, Z., Ding, Y., Xiao, S. & Dong, J. 2018 In: Photonics Research. 6, 9, p. 880-86
Research output: Research - peer-review › Journal article – Annual report year: 2018

Tunable THz perfect absorber with two absorption peaks based on graphene microribbons
Research output: Research - peer-review › Journal article – Annual report year: 2018

Absorption enhancement in graphene with an efficient resonator
Xiao, B., Gu, M., Qin, K. & Xiao, S. 2017 In: Optical and Quantum Electronics. 49, 5, 8 p., 177
Research output: Research - peer-review › Journal article – Annual report year: 2017

Advances on integrated microwave photonics
Research output: Research - peer-review › Article in proceedings – Annual report year: 2017

Broadband, wide-angle and tunable terahertz absorber based on cross-shaped graphene arrays
Research output: Research - peer-review › Journal article – Annual report year: 2017

Efficient electro-optic modulation in low-loss graphene-plasmonic slot waveguides
Research output: Research - peer-review › Journal article – Annual report year: 2017

Hybridized Plasmons in 2D Nanoslits: From Graphene to Anisotropic 2D Materials
Gonçalves, P. A. D., Xiao, S., Peres, N. M. R. & Mortensen, N. A. 2017 In: A C S Photonics. 4, 10, p. 3045-3054
Research output: Research - peer-review › Journal article – Annual report year: 2017

Integrated graphene-based devices for optoelectronic applications
Xiao, S. 2017 2 p.
Research output: Research - peer-review › Paper – Annual report year: 2017

Integrated graphene based modulators enabled by interfacing plasmonic slot and silicon waveguides
Xiao, S. 2017 1 p.
Research output: Research - peer-review › Conference abstract for conference – Annual report year: 2017

Integrated graphene plasmonic waveguide modulators
Xiao, S., Ding, Y., Guan, X. & Mortensen, N. A. 2017 1 p.
Research output: Research - peer-review › Conference abstract for conference – Annual report year: 2017

Integrated graphene waveguide modulators based on low-loss plasmonic slot waveguides
Research output: Research - peer-review › Article in proceedings – Annual report year: 2017

Nanostructures graphene plasmon works close to near-infrared window
Research output: Research - peer-review › Conference abstract for conference – Annual report year: 2017
Equivalent conductivity method: straightforward analytical solution for metasurface-based structures

Metal-loaded graphene surface plasmon waveguides working in the terahertz regime
Xiao, B., Qin, K., Xiao, S. & Han, Z. 2015 In : Optics Communications. 355, p. 602–606

Nanofocusing in a tapered graphene plasmonic waveguide

Overcoming doping limits in MOVPE grown n-doped InP for plasmonic applications

Plasmon resonances of Ag capped Si nanopillars fabricated using mask-less lithography.
Wu, K., Rindzevicius, T., Schmidt, M. S., Mogensen, K. B., Xiao, S. & Boisen, A. 2015 In : Optics Express. 23, 10, p. 12965-12978

Tuning of light-graphene interactions
Xiao, S. 2015 1 p.

Ultrathin 90-degree sharp bends for spoof surface plasmon polaritons
Yang, Y., Chen, H., Xiao, S., Mortensen, N. A. & Zhang, J. 2015 In : Optics Express. 23, 15, p. 19074-19081

Broadband Antireflection and Light Extraction Enhancement in Fluorescent SiC with Nanodome Structures

Enhanced light-matter interaction in graphene
Xiao, S. 2014

Phase study of the generated surface plasmon waves in light transmission through a subwavelength aperture
Hashemi, M., Xiao, S. & Farzad, M. H. 2014 In : Journal of Nanophotonics. 8, 1, 8 p., 083094

Plasmonic Nanostructures for Enhanced Light-Matter Interactions: from Metal to Graphene

Plasmon–Phonon Coupling in Large-Area Graphene Dot and Antidot Arrays Fabricated by Nanosphere Lithography
Plasmon resonance optical tuning based on photosensitive composite structures
Research output: Research - peer-review › Journal article – Annual report year: 2014

Strong light-matter interaction in graphene - Invited talk
Xiao, S. 2014
Research output: Research - peer-review › Conference abstract for conference – Annual report year: 2014

Bends and splitters in graphene nanoribbon waveguides
Zhu, X., Yan, W., Mortensen, N. A. & Xiao, S. 2013 In : Optics Express. 21, 3, p. 3486-3491
Research output: Research - peer-review › Journal article – Annual report year: 2013

Broadband antireflection nanodome structures on SiC substrate
Research output: Research - peer-review › Article in proceedings – Annual report year: 2013

Enhanced absorption of graphene in the visible region by use of plasmonic nanostructures
Research output: Research - peer-review › Journal article – Annual report year: 2013

Enhanced Light–Matter Interactions in Graphene-Covered Gold Nanovoid Arrays
Research output: Research - peer-review › Journal article – Annual report year: 2013

Enhanced Plasmonic Light Absorption for Silicon Schottky-Barrier Photodetectors
Research output: Research - peer-review › Journal article – Annual report year: 2013

Excitation of plasmon modes in a graphene monolayer supported on a 2D subwavelength silicon grating
Research output: Research - peer-review › Article in proceedings – Annual report year: 2013

Experimental observation of plasmons in a graphene monolayer resting on a two-dimensional subwavelength silicon grating
Research output: Research - peer-review › Journal article – Annual report year: 2013

Graphene Plasmonics: Guiding, Excitation and Strong SERS Enhancement
Xiao, S. 2013 1 p.
Research output: Research - peer-review › Conference abstract for conference – Annual report year: 2013

Nonlocal response in plasmonic waveguiding with extreme light confinement
Research output: Research - peer-review › Journal article – Annual report year: 2013

Plasmon polaritons in nanostructured graphene
Research output: Research - peer-review › Conference abstract in proceedings – Annual report year: 2013
Plasmons in nanostructured graphene
Xiao, S. 2013 1 p.
Research output: Research - peer-review › Conference abstract for conference – Annual report year: 2013

Propagation and excitation of graphene plasmon polaritons
Research output: Research - peer-review › Conference article – Annual report year: 2013

Active resonance tuning of stretchable plasmonic structures
Research output: Research - peer-review › Conference article – Annual report year: 2012

A stretch-tunable plasmonic structure with a polarization-dependent response
Research output: Research - peer-review › Journal article – Annual report year: 2012

Broadband enhancement of spontaneous emission in a photonic-plasmonic structure
Research output: Research - peer-review › Journal article – Annual report year: 2012

Broadband light-extraction enhanced by arrays of whispering gallery resonators
Research output: Research - peer-review › Journal article – Annual report year: 2012

Enhanced light absorption in an ultrathin silicon solar cell utilizing plasmonic nanostructures
Research output: Research - peer-review › Conference article – Annual report year: 2012

Evaporation of Water Droplets on "Lock-and-Key" Structures with Nanoscale Features
Research output: Research - peer-review › Journal article – Annual report year: 2012

Geometrical and fluidic tuning of periodically modulated thin metal films
Research output: Research - peer-review › Journal article – Annual report year: 2012

Nanoplasmonics beyond Ohm’s law
Research output: Research - peer-review › Conference abstract in proceedings – Annual report year: 2012

Nanoplasmonics beyond the refractive index
Research output: Research - peer-review › Poster – Annual report year: 2012

Plasmonic Nanostructures: Tailoring Light-matter Interaction
Research output: Research - peer-review › Article in proceedings – Annual report year: 2013
Surface-enhanced Raman spectroscopy: nonlocal limitations
Research output: Research - peer-review › Journal article – Annual report year: 2012

Ultrathin silicon solar cells with enhanced photocurrents assisted by plasmonic nanostructures
Xiao, S., Stassen, E. & Mortensen, N. A. 2012 In: Journal of Nanophotonics. 6, 1, 9 p., 061503
Research output: Research - peer-review › Journal article – Annual report year: 2012

Arbitrarily thin metamaterial structure for perfect absorption and giant magnification
Jin, Y., Xiao, S., Mortensen, N. A. & He, S. 2011 In: Optics Express. 19, 12, p. 11114-11119
Research output: Research - peer-review › Journal article – Annual report year: 2011

Extended verification of scaling behavior in split-ring resonators
Jeppesen, C., Xiao, S., Mortensen, A. & Kristensen, A. 2011 In: Optics Communications. 284, 3, p. 799-801
Research output: Research - peer-review › Journal article – Annual report year: 2011

Field enhancement at metallic interfaces due to quantum confinement
Research output: Research - peer-review › Journal article – Annual report year: 2011

Quenched transmission of light through ultrathin metal films
Research output: Research - peer-review › Conference article – Annual report year: 2011

Surface-plasmon-polariton-induced suppressed transmission through ultrathin metal disk arrays
Research output: Research - peer-review › Journal article – Annual report year: 2011

Surface Plasmon Wave Adapter Designed with Transformation Optics
Research output: Research - peer-review › Journal article – Annual report year: 2011

Antenna-assisted enhanced transmission through subwavelength nanoholes
Research output: Research - peer-review › Conference article – Annual report year: 2010

Coupled-resonator optical waveguides: Q-factor influence on slow-light propagation and the maximal group delay
Research output: Research - peer-review › Journal article – Annual report year: 2010

Electromagnetically induced transparency in metamaterials at near-infrared frequency
Zhang, J., Xiao, S., Jeppesen, C., Kristensen, A. & Mortensen, A. 2010 In : Optics Express. 18, 16, p. 17187-17192
Research output: Research - peer-review › Journal article – Annual report year: 2010

Enhanced transmission of transverse electric waves through periodic arrays of structured subwavelength apertures
Xiao, S., Peng, L. & Mortensen, A. 2010 In : Optics Express. 18, 6, p. 6040-6047
Research output: Research - peer-review › Journal article – Annual report year: 2010

Geometrical tuning of nanoscale split-ring resonators
Research output: Research - peer-review › Article in proceedings – Annual report year: 2010
Group-index limitations in slow-light photonic crystals
Research output: Research - peer-review › Journal article – Annual report year: 2010

Metamaterial localized resonance sensors: prospects and limitations
Jeppesen, C., Xiao, S., Mortensen, A. & Kristensen, A. 2010 In : Optics Express. 18, 24, p. 25075-25080
Research output: Research - peer-review › Journal article – Annual report year: 2010

Nanoimprinted polymer photonic crystal dye lasers
Research output: Research - peer-review › Conference article – Annual report year: 2010

Nearly zero transmission through periodically modulated ultrathin metal films
Research output: Research - peer-review › Journal article – Annual report year: 2010

Plasmonic nanostructures: local versus nonlocal response
Research output: Research - peer-review › Conference article – Annual report year: 2010

Slow-light enhanced absorption in a hollow-core fiber
Grbic, J., Xiao, S., Mørk, J., Jauho, A-P. & Mortensen, A. 2010 In : Optics Express. 18, 13, p. 14270-14279
Research output: Research - peer-review › Journal article – Annual report year: 2010

Temperature stabilization of optofluidic photonic crystal cavities (vol 94, 231114, 2009)
Research output: Research - peer-review › Journal article – Annual report year: 2010

Waveguide-based optofluidics: [invited]
Research output: Research - peer-review › Conference article – Annual report year: 2010

An experimental investigation of Fang's Ag superlens suitable for integration
Research output: Research - peer-review › Conference article – Annual report year: 2009

Enhancement of polymer dye lasers by multifunctional photonic crystal lattice
Research output: Research - peer-review › Article in proceedings – Annual report year: 2009

Limits of slow-light in photonic crystals
Research output: Research - peer-review › Article in proceedings – Annual report year: 2009
Material limitations on the detection limit in refractometry
Skafte-Pedersen, P., Nunes, P., Xiao, S. & Mortensen, Å. 2009 In : Sensors. 9, 11, p. 8382-8390
Research output: Research - peer-review › Journal article – Annual report year: 2009

Prospects and limits of nanostructures for surface-enhanced raman spectroscopy
Research output: Research - peer-review › Article in proceedings – Annual report year: 2009

Reply to "Comment on 'Stability and quality factor of a one-dimensional subwavelength cavity resonator containing a left-handed material"
Research output: Research - peer-review › Editorial – Annual report year: 2009

Temperature stabilization of optofluidic photonic crystal cavities
Research output: Research - peer-review › Journal article – Annual report year: 2009

Thin film Ag superlens towards lab-on-a-chip integration
Research output: Research - peer-review › Journal article – Annual report year: 2009

Effect of loss on slow-light enhanced absorption in liquid-infiltrated photonic crystals
Research output: Research - peer-review › Article in proceedings – Annual report year: 2008

Guided plasmon polaritons for triangular metallic waveguides
Research output: Research - peer-review › Article in proceedings – Annual report year: 2008

Limits of slow light in photonic crystals
Research output: Research - peer-review › Journal article – Annual report year: 2008

Liquid-infiltrated photonic crystals: enhanced light-matter interactions for lab-on-a-chip applications
Research output: Research - peer-review › Journal article – Annual report year: 2008

Low-loss intersection of subwavelength plasmonic slot waveguides
Research output: Research - peer-review › Article in proceedings – Annual report year: 2008

Nanostructure design for surface-enhanced Raman spectroscopy - prospects and limits
Research output: Research - peer-review › Journal article – Annual report year: 2008

Photonic integration in k-space: Enhancing the performance of photonic crystal dye lasers
Research output: Research - peer-review › Journal article – Annual report year: 2008
Resonant-tunnelling-assisted crossing for subwavelenght plasmonic slot waveguides
Xiao, S. & Mortensen, N. A. 2008 In : Optics Express. 16, 19, p. 14997-15005
Research output: Research - peer-review › Journal article – Annual report year: 2008

Slow-light enhanced absorption for bio-chemical sensing applications: potential of low-contrast lossy materials
Research output: Research - peer-review › Journal article – Annual report year: 2008

Enhanced transmission through arrays of subwavelength holes in gold films coated by a finite dielectric layer
Research output: Research - peer-review › Journal article – Annual report year: 2007

Liquid-infiltrated photonic crystals for lab-on-a-chip applications
Research output: Research - peer-review › Article in proceedings – Annual report year: 2007

Optical filter based on two-dimensional photonic crystal surface-mode cavity in amorphous silicon-on-silica structure
Research output: Research - peer-review › Journal article – Annual report year: 2007

Optical microcavities based on surface modes in two-dimensional photonic crystals and silicon-on-insulator photonic crystals
Research output: Research - peer-review › Journal article – Annual report year: 2007

Proposal of highly sensitive optofluidic sensors based on dispersive photonic crystal waveguides
Research output: Research - peer-review › Journal article – Annual report year: 2007

Slow-light enhanced optical detection in liquid-infiltrated photonic crystals
Research output: Research - peer-review › Journal article – Annual report year: 2007

Slow-light enhancement of Beer-Lambert-Bouguer absorption
Research output: Research - peer-review › Journal article – Annual report year: 2007

Theoretical study of the transmission properties of a metallic film with surface corrugations
Xiao, S. & Qiu, M. 2007 In : JOURNAL OF OPTICS A PURE AND APPLIED OPTICS. 9, 4, p. 348-351
Research output: Research - peer-review › Journal article – Annual report year: 2007

Highly dispersive photonic band-gap-edge optofluidic biosensors
Research output: Research - peer-review › Journal article – Annual report year: 2006

Liquid-infiltrated photonic crystals: Ohmic dissipation and broadening of modes
Research output: Research - peer-review › Journal article – Annual report year: 2006
Mesoscopic magnetism in dielectric photonic crystal meta materials: topology and inhomogeneous broadening
Research output: Research - peer-review › Journal article – Annual report year: 2006

Resonator channel drop filters in a plasmon-polaritons metal
Xiao, S., Liu, L. & Qiu, M. 2006 In : Optics Express. 14, 7, p. 2932-2937
Research output: Research - peer-review › Journal article – Annual report year: 2006

Coupling between plane waves and Bloch waves in photonic crystals with negative refraction
Research output: Research - peer-review › Journal article – Annual report year: 2005

Doppler effects in a left-handed material: A first-principles theoretical study
Xiao, S. & Qiu, M. 2005 In : Microwave & Optical Technology Letters. 47, 1, p. 76–79
Research output: Research - peer-review › Journal article – Annual report year: 2005

High-Q microcavities realized in a circular photonic crystal slab
Research output: Research - peer-review › Journal article – Annual report year: 2005

Negative refraction in two-dimensional photonic crystals
Research output: Research - peer-review › Journal article – Annual report year: 2005

Study of transmission properties for waveguide bends by use of a circular photonic crystal
Research output: Research - peer-review › Journal article – Annual report year: 2005

Surface-mode microcavity
Research output: Research - peer-review › Journal article – Annual report year: 2005

A Novel Directional Coupler Utilizing a Left-Handed Material
Research output: Research - peer-review › Journal article – Annual report year: 2004

Influence of the surface termination to the point imaging by a photonic crystal slab with negative refraction
Research output: Research - peer-review › Journal article – Annual report year: 2004

Stability and quality factor of a one-dimensional subwavelength cavity resonator containing a left-handed material
Research output: Research - peer-review › Journal article – Annual report year: 2004

A plane-wave expansion method based on the effective medium theory for calculating the band structure of a two-dimensional photonic crystal
Research output: Research - peer-review › Journal article – Annual report year: 2003

Exact expression for decoherence factor in the time-dependent generalized Cini model
Research output: Research - peer-review › Journal article – Annual report year: 2003
FDTD method for computing the off-plane band structure in a two-dimensional photonic crystal consisting of nearly free-electron metals
Xiao, S. & He, S. Nov 2002 In : Physica B: Condensed Matter. 324, 1-4, p. 403-408
Research output: Research - peer-review › Journal article – Annual report year: 2002

Large absolute band gaps in two-dimensional photonic crystals formed by large dielectric pixels
Research output: Research - peer-review › Journal article – Annual report year: 2002

A FDTD method for calculating defect modes in a two-dimensional photonic crystal consisting of anisotropic cylinders
Research output: Research - peer-review › Journal article – Annual report year: 2002

A finite-difference eigenvalue algorithm for calculating the band structure of a photonic crystal
Research output: Research - peer-review › Journal article – Annual report year: 2002

Band structure of a two-dimensional photonic crystal with a triangular lattice of anisotropic elliptic cylinders
Research output: Research - peer-review › Journal article – Annual report year: 2002

Large absolute photonic bandgap at high frequencies in a two-dimensional photonic crystal with a hexagonal structure
Research output: Research - peer-review › Journal article – Annual report year: 2002

Large Complete Band Gap at Low and High Frequencies in a 2D Anisotropic Photonic Crystal
Research output: Research - peer-review › Journal article – Annual report year: 2002

A new finite-difference time-domain method for photonic crystals consisting of nearly-free-electron metals
He, S., Xiao, S., Shen, L., He, J. & Fu, J. 16 Nov 2001 In : Journal of Physics A: Mathematical and General. 34, 45, p. 9713-9721
Research output: Research - peer-review › Journal article – Annual report year: 2001

Guided modes in a two-dimensional photonic crystal waveguide consisting of nearly-free-electron metals
Research output: Research - peer-review › Journal article – Annual report year: 2001

Defect mode computation in two-dimensional photonic crystals consisting of nearly-free-electron metals
Research output: Research - peer-review › Journal article – Annual report year: 2001

Theoretical analysis of a vertical channel dropping tunnelling process in a photonic crystal for wavelength division demultiplexing
Research output: Research - peer-review › Journal article – Annual report year: 2001

Analysis of channel-dropping tunnelling processes in photonic crystals with multiple vertical multi-mode cavities
Research output: Research - peer-review › Journal article – Annual report year: 2000

Projects:
Single-Photon Emitters in 2D Materials
Fischer, M., Stenger, N., Wubs, M. & Xiao, S.
Institut stipendie (DTU)
01/03/2018 → 28/02/2021
Project: PhD

Light-matter interactions in low-dimensional materials
Geisler, M., Xiao, S., Mortensen, N. A. & Stenger, N.
Institut stipendie (DTU)
01/04/2016 → 31/03/2019
Project: PhD

Plasmonic nanostructures for energy harvesting
Institut stipendie (DTU) Samf.
01/10/2011 → 12/12/2014
Project: PhD

Nano-Engineered Silicon waveguides for Terabit per second Optical Processing (NESTOR)
Institut stipendie (DTU) Samf.
15/08/2012 → 17/02/2016
Project: PhD

Sino-Danish network activity on nanoplasmonics
Styrelsen for Forskning og Innovation
01/03/2012 → 31/12/2012
Project: Research

Activities:

Peking University
Xiao, S. (Visiting researcher)
10 May 2018
Activity: Visiting an external institution › Visiting another research institution

Applied Optics (Journal)
Xiao, S. (Reviewer)
1 Jan 2017 → 30 Dec 2019
Activity: Research › Journal editor

36th Progress In Electromagnetics Research Symposium
Xiao, S. (Organizer)
6 Jul 2015 → 9 Jul 2015
Activity: Attending an event › Participating in or organising a conference

3rd Advanced Electromagnetics Symposium
Xiao, S. (Organizer)
6 Dec 2014 → 10 Dec 2014
Activity: Attending an event › Participating in or organising a conference

EMN Fall Meeting
Xiao, S. (Organizer)
22 Nov 2014 → 25 Nov 2014
35th Progress In Electromagnetics Research Symposium
Xiao, S. (Organizer)
Activity: Attending an event › Participating in or organising a conference

Talk about "Improved polymer band edge lasers by multifunctional photonic crystal" Presented at PECS VIII, The 8th International Photonic & Electromagnetic Crystal structures Meeting
Xiao, S. (Speaker)
5 Apr 2009 → 9 Apr 2009
Activity: Talks and presentations › Conference presentations

Prizes:

the European Optical Society Prize 2008
Sanshui Xiao (Recipient), 2008
Prize: Prizes, scholarships, distinctions