

Stanford



Shanhui Fan

Director, Edward L. Ginzton Laboratory, Professor of Electrical Engineering and, by courtesy, of Applied Physics

Bio

BIO

Fan's research involves the theory and simulations of photonic and solid-state materials and devices; photonic crystals; nano-scale photonic devices and plasmonics; quantum optics; computational electromagnetics; parallel scientific computing.

ACADEMIC APPOINTMENTS

- Professor, Electrical Engineering
- Professor (By courtesy), Applied Physics
- Affiliate, Precourt Institute for Energy

HONORS AND AWARDS

- Fellow, IEEE (2010)
- Fellow, SPIE (2009)
- Fellow, American Physical Society (2008)
- Fellow, Optical Society of America (2007)
- Award for Initiatives in Research, NAS (2007)
- David and Lucile Packard Fellowship in Science and Engineering, David and Lucile Packard (2013)
- David and Lucile Packard Foundation Career Award, David and Lucile Packard (2013)
- Adolph Lomb Medal, National Science Foundation (2013)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- member, Optical Society of America (2013 - present)

PROFESSIONAL EDUCATION

- PhD, MIT, Physics (1997)

LINKS

- <http://www.stanford.edu/~shanhui>: <http://www.stanford.edu/~shanhui>

Teaching

COURSES

2017-18

- Guided Waves: EE 236B (Win)
- Nanophotonics: EE 336, MATSCI 346 (Aut)

2016-17

- Guided Waves: EE 236B (Win)
- Nanophotonics: EE 336, MATSCI 346 (Aut)

2015-16

- Basic Physics for Solid State Electronics: EE 228 (Spr)
- Guided Waves: EE 236B (Win)

2014-15

- Basic Physics for Solid State Electronics: EE 228 (Spr)
- Guided Waves: EE 236B (Win)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Jingyuan Linda Zhang

Postdoctoral Faculty Sponsor

Zhen Chen, Avik Dutt, Wei Li, Momchil Minkov, Parthiban Santhanam, Yu Song, Ian Williamson, Meng Xiao, Luqi Yuan, Bo Zhao

Doctoral (Program)

Jinhie Skarda

Publications

PUBLICATIONS

- **Input-output formalism for few-photon transport: A systematic treatment beyond two photons** *PHYSICAL REVIEW A*
Xu, S., Fan, S.
2015; 91 (4)
- **Heat-flux control and solid-state cooling by regulating chemical potential of photons in near-field electromagnetic heat transfer** *PHYSICAL REVIEW B*
Chen, K., Santhanam, P., Sandhu, S., Zhu, L., Fan, S.
2015; 91 (13)
- **Optical separation of heterogeneous size distributions of microparticles on silicon nitride strip waveguides** *OPTICS EXPRESS*
Khan, S. A., Shi, Y., Chang, C., Jan, C., Fan, S., Ellerbee, A. K., Solgaard, O.
2015; 23 (7): 8855-8866
- **Near-complete violation of detailed balance in thermal radiation** *PHYSICAL REVIEW B*
Zhu, L., Fan, S.
2014; 90 (22)
- **Accelerating simulation of ensembles of locally differing optical structures via a Schur complement domain decomposition** *OPTICS LETTERS*
Verweij, S., Liu, V., Fan, S.
2014; 39 (22): 6458-6461
- **Consideration of enhancement of thermal rectification using metamaterial models** *JOURNAL OF QUANTITATIVE SPECTROSCOPY & RADIATIVE TRANSFER*
Iizuka, H., Fan, S.
2014; 148: 156-164
- **Light Guiding by Effective Gauge Field for Photons** *PHYSICAL REVIEW X*

- Lin, Q., Fan, S.
2014; 4 (3)
- **Total absorption by degenerate critical coupling** *APPLIED PHYSICS LETTERS*
Piper, J. R., Liu, V., Fan, S.
2014; 104 (25)
 - **Optical Fano resonance of an individual semiconductor nanostructure** *NATURE MATERIALS*
Fan, P., Yu, Z., Fan, S., Brongersma, M. L.
2014; 13 (5): 471-475
 - **Total Absorption in a Graphene Mono layer in the Optical Regime by Critical Coupling with a Photonic Crystal Guided Resonance** *ACS PHOTONICS*
Piper, J. R., Fan, S.
2014; 1 (4): 347-353
 - **Fluctuational electrodynamics calculations of near-field heat transfer in non-planar geometries: A brief overview** *JOURNAL OF QUANTITATIVE SPECTROSCOPY & RADIATIVE TRANSFER*
Otey, C. R., Zhu, L., Sandhu, S., Fan, S.
2014; 132: 3-11
 - **Light Trapping in Photonic Crystals** *Conference on Thin Films for Solar and Energy Technology VI*
Wang, K. X., Yu, Z., Liu, V., Raman, A., Cui, Y., Fan, S.
SPIE-INT SOC OPTICAL ENGINEERING.2014
 - **Ultrahigh contrast and large-bandwidth thermal rectification in near-field electromagnetic thermal transfer between nanoparticles** *Conference on Nanophotonic Materials XI*
Zhu, L., Otey, C. R., Fan, S.
SPIE-INT SOC OPTICAL ENGINEERING.2014
 - **Efficiency above the Shockley-Queisser Limit by Using Nanophotonic Effects To Create Multiple Effective Bandgaps With a Single Semiconductor** *NANO LETTERS*
Yu, Z., Sandhu, S., Fan, S.
2014; 14 (1): 66-70
 - **Coupled double-layer Fano resonance photonic crystal filters with lattice-displacement** *APPLIED PHYSICS LETTERS*
Shuai, Y., Zhao, D., Chadha, A. S., Seo, J., Yang, H., Fan, S., Ma, Z., Zhou, W.
2013; 103 (24)
 - **Deep subwavelength plasmonic waveguide switch in double graphene layer structure** *APPLIED PHYSICS LETTERS*
Iizuka, H., Fan, S.
2013; 103 (23)
 - **Analytic properties of two-photon scattering matrix in integrated quantum systems determined by the cluster decomposition principle.** *Physical review letters*
Xu, S., Rephaeli, E., Fan, S.
2013; 111 (22): 223602-?
 - **Analytic Properties of Two-Photon Scattering Matrix in Integrated Quantum Systems Determined by the Cluster Decomposition Principle** *PHYSICAL REVIEW LETTERS*
Xu, S., Rephaeli, E., Fan, S.
2013; 111 (22)
 - **Color-preserving daytime radiative cooling** *APPLIED PHYSICS LETTERS*
Zhu, L., Raman, A., Fan, S.
2013; 103 (22)
 - **Controlling the Flow of Light Using the Inhomogeneous Effective Gauge Field that Emerges from Dynamic Modulation** *PHYSICAL REVIEW LETTERS*
Fang, K., Fan, S.
2013; 111 (20)
 - **Ultrahigh-contrast and large-bandwidth thermal rectification in near-field electromagnetic thermal transfer between nanoparticles** *PHYSICAL REVIEW B*

- Zhu, L., Otey, C. R., Fan, S.
2013; 88 (18)
- **Effective magnetic field for photons based on the magneto-optical effect** *PHYSICAL REVIEW A*
Fang, K., Fan, S.
2013; 88 (4)
 - **A lateral optical equilibrium in waveguide-resonator optical force** *OPTICS EXPRESS*
Intaraprasongk, V., Fan, S.
2013; 21 (21): 25257-25270
 - **Double-layer Fano resonance photonic crystal filters** *OPTICS EXPRESS*
Shuai, Y., Zhao, D., Tian, Z., Seo, J., Plant, D. V., Ma, Z., Fan, S., Zhou, W.
2013; 21 (21): 24582-24589
 - **Dissipation in few-photon waveguide transport [Invited]** *PHOTONICS RESEARCH*
Rephaeli, E., Fan, S.
2013; 1 (3): 110-114
 - **Accelerated solution of the frequency-domain Maxwell's equations by engineering the eigenvalue distribution of the operator** *OPTICS EXPRESS*
Shin, W., Fan, S.
2013; 21 (19): 22578-22595
 - **Optical pulling force and conveyor belt effect in resonator-waveguide system** *OPTICS LETTERS*
Intaraprasongk, V., Fan, S.
2013; 38 (17): 3264-3267
 - **Photonic de Haas-van Alphen effect** *OPTICS EXPRESS*
Fang, K., Yu, Z., Fan, S.
2013; 21 (15): 18216-18224
 - **Modeling Coherent Backscattering Errors in Fiber Optic Gyroscopes for Sources of Arbitrary Line Width** *JOURNAL OF LIGHTWAVE TECHNOLOGY*
Lloyd, S. W., Digonnet, M. J., Fan, S.
2013; 31 (13): 2070-2078
 - **Experimental Observation of Low Noise and Low Drift in a Laser-Driven Fiber Optic Gyroscope** *JOURNAL OF LIGHTWAVE TECHNOLOGY*
Lloyd, S. W., Fan, S., Digonnet, M. J.
2013; 31 (13): 2079-2085
 - **Slow-Light Fiber-Bragg-Grating Strain Sensor With a 280-femtostrain/root Hz Resolution** *JOURNAL OF LIGHTWAVE TECHNOLOGY*
Wen, H., Skolianos, G., Fan, S., Bernier, M., Vallee, R., Digonnet, M. J.
2013; 31 (11): 1804-1808
 - **Wireless power transfer in the presence of metallic plates: Experimental results** *AIP ADVANCES*
Yu, X., Skauli, T., Skauli, B., Sandhu, S., Catrysse, P. B., Fan, S.
2013; 3 (6)
 - **Near-infrared surface plasmon polariton dispersion control with hyperbolic metamaterials** *OPTICS EXPRESS*
Luk, T. S., Kim, I., Campione, S., Howell, S. W., Subramania, G. S., Grubbs, R. K., Brener, I., Chen, H., Fan, S., Sinclair, M. B.
2013; 21 (9): 11107-11114
 - **Upper bound on the modal material loss rate in plasmonic and metamaterial systems.** *Physical review letters*
Raman, A., Shin, W., Fan, S.
2013; 110 (18): 183901-?
 - **Resonant cavity enhanced light harvesting in flexible thin-film organic solar cells** *OPTICS LETTERS*
Sergeant, N. P., Niesen, B., Liu, A. S., Boman, L., Stoessel, C., Heremans, P., Peumans, P., Rand, B. P., Fan, S.
2013; 38 (9): 1431-1433
 - **Compact bends for multi-mode photonic crystal waveguides with high transmission and suppressed modal crosstalk** *OPTICS EXPRESS*
Liu, V., Fan, S.

2013; 21 (7): 8069-8075

- **Ultrabroadband Photonic Structures To Achieve High-Performance Daytime Radiative Cooling** *NANO LETTERS*
Rephaeli, E., Raman, A., Fan, S.
2013; 13 (4): 1457-1461
- **Experimental Assessment of the Accuracy of an Advanced Photonic-Bandgap-Fiber Model** *JOURNAL OF LIGHTWAVE TECHNOLOGY*
Aghaie, K. Z., Digonnet, M. J., Fan, S.
2013; 31 (7): 1015-1022
- **Fluorescence Correlation Spectroscopy at High Concentrations using Gold Bowtie Nanoantennas (vol 406C, pg 3, 2012)** *CHEMICAL PHYSICS*
Kinkhabwala, A. A., Yu, Z., Fan, S., Moerner, E.
2013; 415: 309-309
- **Temporal coupled mode theory for thermal emission from a single thermal emitter supporting either a single mode or an orthogonal set of modes** *APPLIED PHYSICS LETTERS*
Zhu, L., Sandhu, S., Otey, C., Fan, S., Sinclair, M. B., Luk, T. S.
2013; 102 (10)
- **Experimental demonstration of a photonic Aharonov-Bohm effect at radio frequencies** *PHYSICAL REVIEW B*
Fang, K., Yu, Z., Fan, S.
2013; 87 (6)
- **Highly Tailored Computational Electromagnetics Methods for Nanophotonic Design and Discovery** *PROCEEDINGS OF THE IEEE*
Liu, V., Miller, D. A., Fan, S.
2013; 101 (2): 484-493
- **Transparent and conductive paper from nanocellulose fibers** *ENERGY & ENVIRONMENTAL SCIENCE*
Hu, L., Zheng, G., Yao, J., Liu, N., Weil, B., Eskilsson, M., Karabulut, E., Ruan, Z., Fan, S., Bloking, J. T., McGehee, M. D., Wagberg, L., Cui, et al
2013; 6 (2): 513-518
- **Tight-binding calculation of radiation loss in photonic crystal CROW** *OPTICS EXPRESS*
Ma, J., Martinez, L. J., Fan, S., Povinelli, M. L.
2013; 21 (2): 2463-2473
- **Fundamental bounds on decay rates in asymmetric single-mode optical resonators** *OPTICS LETTERS*
Wang, K. X., Yu, Z., Sandhu, S., Fan, S.
2013; 38 (2): 100-102
- **Detailed balance analysis of nanophotonic solar cells** *OPTICS EXPRESS*
Sandhu, S., Yu, Z., Fan, S.
2013; 21 (1): 1209-1217
- **Routing of Deep-Subwavelength Optical Beams and Images without Reflection and Diffraction Using Infinitely Anisotropic Metamaterials** *ADVANCED MATERIALS*
Catrysse, P. B., Fan, S.
2013; 25 (2): 194-198
- **Synthetic magnetic field directs photons** *PHOTONICS SPECTRA*
Fan, S.
2013; 47 (1): 28-?
- **Photonic structures: advanced thermal control, and effective gauge field for light** *7th International Congress on Advanced Electromagnetic Materials in Microwaves and Optics (METAMATERIALS)*
Fan, S., Yu, Z., Fang, K., Rephaeli, E., Raman, A.
IEEE.2013: 232-233
- **Manipulating Thermal Electromagnetic Fields by Engineering Nanophotonic Resonances** *10th Conference on Lasers and Electro-Optics Pacific Rim (CLEO-PR)*
Fan, S., Yu, Z., Rephaeli, E., Raman, A.
IEEE.2013

- **Local density of states of chiral Hall edge states in gyrotropic photonic clusters** *Physical Review B*
Fan, S., H., Asatryan, A., A., Botten, L., C., Fang et al., K., J.
2013; 88 (3)
- **Color-preserving daytime radiative cooling** *Applied Physics Letters*
Zhu, L., X., Raman, A., Fan, S., H.
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- **Effective magnetic field for photons based on the magneto-optical effect** *Physical Review A*
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- **Deep subwavelength plasmonic waveguide switch in double graphene layer structure** *Applied Physics Letters*
Iizuka, H., Fan, S., H.
2013; 103 (23)
- **What is - and what is not - an optical isolator** *Nature Photonics*
Fan, S., H., Jalas, D., Petrov, A., Eich et al., M.
2013; 7 (8): 579-582
- **Upper Bound on the Modal Material Loss Rate in Plasmonic and Metamaterial Systems** *Physical Review Letters*
Raman, A., Shin, W., Fan, S., H.
2013; 110 (18)
- **Two-photon transport through a waveguide coupling to a whispering-gallery resonator containing an atom and photon-blockade effect** *Physical Review A*
Shi, T., Fan, S., H.
2013; 87 (6)
- **Two-Dimensional Chalcogenide Nanoplates as Tunable Metamaterials via Chemical Intercalation** *Nano Letters*
Fan, S., H., Cha, J., J., Koski, K., J., Huang et al., K., C. Y.
2013; 13 (12): 5913-5918
- **Metamaterial band theory: fundamentals & applications** *Science China-Information Sciences*
Raman, A., P., Shin, W., Fan, S., H.
2013; 56 (12)
- **Experimental demonstration of a photonic Aharonov-Bohm effect at radio frequencies** *Physical Review B*
Fang, K., J., Yu, Z., F., Fan, S., H.
2013; 87 (6)
- **Coupled double-layer Fano resonance photonic crystal filters with lattice-displacement** *Applied Physics Letters*
Fan, S., H., Shuai, Y., C., Zhao, D., Y., Chadha et al, A., S.
2013; 103 (24)
- **Analytic Properties of Two-Photon Scattering Matrix in Integrated Quantum Systems Determined by the Cluster Decomposition Principle** *Physical Review Letters*
Xu, S., S., Rephaeli, E., Fan, S., H.
2013; 111 (22)
- **A transparent electrode based on a metal nanotrough network** *Nature Nanotechnology*
Fan, S., H., Wu, H., Kong, S., D., Ruan et al., C., Z.
2013; 8 (6): 421-425
- **Enhancing far-field thermal emission with thermal extraction** *Nature Communications*
Fan, S., H., Yu, Z., Sergeant, N., P., Skauli et al., T.
2013; 4
- **Broadband Sharp 90-degree Bends and T-Splitters in Plasmonic Coaxial Waveguides** *Nano Letters*
Fan, S., H., Shin, W., Cai, W., S., Catrysse et al., P., B.
2013; 13 (10): 4753-4758

- **Ultrahigh-contrast and large-bandwidth thermal rectification in near-field electromagnetic thermal transfer between nanoparticles** *Physical Review B*
Zhu, L., X., Otey, C., R., Fan, S., H.
2013; 88 (18)
- **Three-dimensional self-assembled photonic crystals with high temperature stability for thermal emission modification** *Nature Communications*
Fan, S., H., Arpin, K., A., Losego, M., D., Cloud et. al., A., N.
2013; 4
- **Fluorescence Correlation Spectroscopy at High Concentrations using Gold Bowtie Nanoantennas (vol 406C, pg 3, 2012)** *Chemical Physics*
Kinkhabwala, A., A., Yu, Z., F., Fan et. al., S., H.
2013; 415: 309
- **Controlling the Flow of Light Using the Inhomogeneous Effective Gauge Field that Emerges from Dynamic Modulation** *Physical Review Letters*
Fang, K., J., Fan, S., H.
2013; 111 (20)
- **Wireless power transfer in the presence of metallic plates: Experimental results** *Aip Advances*
Fan, S., H., Yu, X., F., Skauli, T., Skauli et. al., B.
2013; 3 (6)
- **Temporal coupled mode theory for thermal emission from a single thermal emitter supporting either a single mode or an orthogonal set of modes** *Applied Physics Letters*
Fan, S., H., Zhu, L., X., Sandhu, S., Otey et. al., C.
2013; 102 (10)
- **Optimization of non-periodic plasmonic light-trapping layers for thin-film solar cells** *Nature Communications*
Fan, S., H., Pala, R., A., Liu, J., S. Q., Barnard et. al., E., S.
2013; 4
- **Modal Source Radiator Model for Arbitrary Two-Dimensional Arrays of Subwavelength Apertures on Metal Films** *Ieee Journal of Selected Topics in Quantum Electronics*
Tanemura, T., Wahl, P., Fan et. al., S., H.
2013; 19 (3)
- **Enhancing far-field thermal emission with thermal extraction.** *Nature communications*
Yu, Z., Sergeant, N. P., Skauli, T., Zhang, G., Wang, H., Fan, S.
2013; 4: 1730-?
- **Enhancing the waveguide-resonator optical force with an all-optical on-chip analog of electromagnetically induced transparency** *PHYSICAL REVIEW A*
Intaraprasongk, V., Fan, S.
2012; 86 (6)
- **Ultra-compact photonic crystal waveguide spatial mode converter and its connection to the optical diode effect** *OPTICS EXPRESS*
Liu, V., Miller, D. A., Fan, S.
2012; 20 (27): 28388-28397
- **A simple Bayesian decision-theoretic design for dose-finding trials** *STATISTICS IN MEDICINE*
Fan, S. K., Lu, Y., Wang, Y.
2012; 31 (28): 3719-3730
- **On the Time to Conclusion of Phase II Cancer Clinical Trials and Its Application in Trial Designs** *STATISTICS IN BIOPHARMACEUTICAL RESEARCH*
2012; 4 (4): 324-335
- **Few-Photon Single-Atom Cavity QED With Input-Output Formalism in Fock Space** *IEEE JOURNAL OF SELECTED TOPICS IN QUANTUM ELECTRONICS*
Rephaeli, E., Fan, S.
2012; 18 (6): 1754-1762
- **Realizing effective magnetic field for photons by controlling the phase of dynamic modulation** *NATURE PHOTONICS*
Fang, K., Yu, Z., Fan, S.

2012; 6 (11): 782-787

- **Thermodynamic Upper Bound on Broadband Light Coupling with Photonic Structures** *PHYSICAL REVIEW LETTERS*
Yu, Z., Raman, A., Fan, S.
2012; 109 (17)
- **Fluorescence correlation spectroscopy at high concentrations using gold bowtie nanoantennas** *CHEMICAL PHYSICS*
Kinkhabwala, A. A., Yu, Z., Fan, S., Moerner, W. E.
2012; 406: 3-8
- **Optical Absorption Enhancement in Freestanding GaAs Thin Film Nanopyramid Arrays** *ADVANCED ENERGY MATERIALS*
Liang, D., Huo, Y., Kang, Y., Wang, K. X., Gu, A., Tan, M., Yu, Z., Li, S., Jia, J., Bao, X., Wang, S., Yao, Y., Wong, et al
2012; 2 (10): 1254-1260
- **S-4: A free electromagnetic solver for layered periodic structures** *COMPUTER PHYSICS COMMUNICATIONS*
Liu, V., Fan, S.
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- **Design for broadband on-chip isolator using stimulated Brillouin scattering in dispersion-engineered chalcogenide waveguides** *OPTICS EXPRESS*
Poulton, C. G., Pant, R., Byrnes, A., Fan, S., Steel, M. J., Eggleton, B. J.
2012; 20 (19): 21235-21246
- **Near-Field Radiative Cooling of Nanostructures** *NANO LETTERS*
Guha, B., Otey, C., Poitras, C. B., Fan, S., Lipson, M.
2012; 12 (9): 4546-4550
- **Photonic chip based tunable and reconfigurable narrowband microwave photonic filter using stimulated Brillouin scattering** *OPTICS EXPRESS*
Byrnes, A., Pant, R., Li, E., Choi, D., Poulton, C. G., Fan, S., Madden, S., Luther-Davies, B., Eggleton, B. J.
2012; 20 (17): 18836-18845
- **Electrically Driven Nonreciprocity Induced by Interband Photonic Transition on a Silicon Chip** *PHYSICAL REVIEW LETTERS*
Lira, H., Yu, Z., Fan, S., Lipson, M.
2012; 109 (3)
- **Rectification of evanescent heat transfer between dielectric-coated and uncoated silicon carbide plates** *JOURNAL OF APPLIED PHYSICS*
Iizuka, H., Fan, S.
2012; 112 (2)
- **Hybrid Silicon Nanocone-Polymer Solar Cells** *NANO LETTERS*
Jeong, S., Garnett, E. C., Wang, S., Yu, Z., Fan, S., Brongersma, M. L., McGehee, M. D., Cui, Y.
2012; 12 (6): 2971-2976
- **High-Efficiency Amorphous Silicon Solar Cell on a Periodic Nanocone Back Reflector** *ADVANCED ENERGY MATERIALS*
Hsu, C., Battaglia, C., Pahud, C., Ruan, Z., Haug, F., Fan, S., Ballif, C., Cui, Y.
2012; 2 (6): 628-633
- **Instantaneous electric energy and electric power dissipation in dispersive media** *JOURNAL OF THE OPTICAL SOCIETY OF AMERICA B-OPTICAL PHYSICS*
Shin, W., Raman, A., Fan, S.
2012; 29 (5): 1048-1054
- **Choice of the perfectly matched layer boundary condition for frequency-domain Maxwell's equations solvers** *JOURNAL OF COMPUTATIONAL PHYSICS*
Shin, W., Fan, S.
2012; 231 (8): 3406-3431
- **Temporal coupled-mode theory for light scattering by an arbitrarily shaped object supporting a single resonance** *PHYSICAL REVIEW A*
Ruan, Z., Fan, S.
2012; 85 (4)
- **Photonic Aharonov-Bohm Effect Based on Dynamic Modulation** *PHYSICAL REVIEW LETTERS*
Fang, K., Yu, Z., Fan, S.

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- **Stimulated Emission from a Single Excited Atom in a Waveguide** *PHYSICAL REVIEW LETTERS*
Rephaeli, E., Fan, S.
2012; 108 (14)
- **Resonant Fiber Optic Gyroscope Using an Air-Core Fiber** *JOURNAL OF LIGHTWAVE TECHNOLOGY*
Terrel, M. A., Digonnet, M. J., Fan, S.
2012; 30 (7): 931-937
- **Absorption Enhancement in Ultrathin Crystalline Silicon Solar Cells with Antireflection and Light-Trapping Nanocone Gratings** *NANO LETTERS*
Wang, K. X., Yu, Z., Liu, V., Cui, Y., Fan, S.
2012; 12 (3): 1616-1619
- **From Electromagnetically Induced Transparency to Superscattering with a Single Structure: A Coupled-Mode Theory for Doubly Resonant Structures** *PHYSICAL REVIEW LETTERS*
Verslegers, L., Yu, Z., Ruan, Z., Catrysse, P. B., Fan, S.
2012; 108 (8)
- **Resonance fluorescence in a waveguide geometry** *PHYSICAL REVIEW A*
Kocabas, S. E., Rephaeli, E., Fan, S.
2012; 85 (2)
- **Lossless intensity modulation in integrated photonics** *OPTICS EXPRESS*
Sandhu, S., Fan, S.
2012; 20 (4): 4280-4290
- **Broadband light management using low-Q whispering gallery modes in spherical nanoshells** *NATURE COMMUNICATIONS*
Yao, Y., Yao, J., Narasimhan, V. K., Ruan, Z., Xie, C., Fan, S., Cui, Y.
2012; 3
- **Negative differential thermal conductance through vacuum** *APPLIED PHYSICS LETTERS*
Zhu, L., Otey, C. R., Fan, S.
2012; 100 (4)
- **Comment on "Nonreciprocal Light Propagation in a Silicon Photonic Circuit"** *SCIENCE*
Fan, S., Baets, R., Petrov, A., Yu, Z., Joannopoulos, J. D., Freude, W., Melloni, A., Popovic, M., Vanwolleghem, M., Jalas, D., Eich, M., Krause, M., Renner, et al
2012; 335 (6064)
- **Temperature dependence of surface phonon polaritons from a quartz grating (vol 110, 043517, 2011)** *JOURNAL OF APPLIED PHYSICS*
Hafeli, A. K., Rephaeli, E., Fan, S., Cahill, D. G., Tiwald, T. E.
2012; 111 (1)
- **From Electromagnetically Induced Transparency to Superscattering with a Single Structure: A Coupled-Mode Theory for Doubly Resonant Structures** *Physical Review Letters*
Fan, S., H., Verslegers, L., Yu, Z., F., Ruan et al., Z., C.
2012; 108 (8)
- **Temporal coupled-mode theory for light scattering by an arbitrarily shaped object supporting a single resonance** *Physical Review A*
Ruan, Z., C., Fan, S., H.
2012; 85 (4)
- **Resonance fluorescence in a waveguide geometry** *Physical Review A*
Kocabas, S., E., Rephaeli, E., Fan, S., H.
2012; 85 (2)
- **Thermodynamic Upper Bound on Broadband Light Coupling with Photonic Structures** *Physical Review Letters*
Yu, Z., F., Raman, A., Fan, S., H.
2012; 109 (17)
- **Temperature dependence of surface phonon polaritons from a quartz grating (vol 110, 043517, 2011)** *Journal of Applied Physics*

- Hafeli, A., K., Rephaeli, E., Fan et. al., S., H.
2012; 111 (1)
- **Photonic Aharonov-Bohm Effect Based on Dynamic Modulation** *Physical Review Letters*
Fang, K., J., Yu, Z., F., Fan, S., H.
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 - **Negative differential thermal conductance through vacuum** *Applied Physics Letters*
Zhu, L., Otey, C., R., Fan, S., H.
2012; 100 (4)
 - **Comment on "Nonreciprocal Light Propagation in a Silicon Photonic Circuit** *Science*
Fan, S., H., Baets, R., Petrov et. al., A.
2012; 335 (6064)
 - **Broadband light management using low-Q whispering gallery modes in spherical nanoshells** *Nature Communications*
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 - **Stimulated Emission from a Single Excited Atom in a Waveguide** *Physical Review Letters*
Rephaeli, E., Fan, S., H.
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Intaraprasongk, V., Fan, S., H.
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 - **Electrically Driven Nonreciprocity Induced by Interband Photonic Transition on a Silicon Chip** *Physical Review Letters*
Lira, H., Yu, Z., F., Fan et. al., S., H.
2012; 109 (3)
 - **Rectification of evanescent heat transfer between dielectric-coated and uncoated silicon carbide plates** *Journal of Applied Physics*
Iizuka, H., Fan, S., H.
2012; 112 (2)
 - **Extraordinarily high spectral sensitivity in refractive index sensors using multiple optical modes** *Conference on Lasers and Electro-Optics (CLEO)*
Yu, Z., Fan, S.
IEEE.2012
 - **Deep sub-wavelength beam propagation, beam manipulation and imaging with extreme anisotropic meta-materials** *Conference on Lasers and Electro-Optics (CLEO)*
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