




## James Harris

James and Elenor Chesebrough Professor in the School of Engineering, Emeritus  
Electrical Engineering

 NIH Biosketch available Online

 Curriculum Vitae available Online

### Bio

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#### BIO

Harris utilizes molecular beam epitaxy (MBE) of III-V compound semiconductor materials to investigate new materials for electronic and optoelectronic devices. He utilizes heterojunctions, superlattices, quantum wells, and three-dimensional self-assembled quantum dots to create metastable engineered materials with novel or improved properties for electronic and optoelectronic devices. He has recently focused on three areas: 1) integration of photonic devices and micro optics for creation of new minimally invasive bio and medical systems for micro-array and neural imaging and 2) application of nanostructures semiconductors for the acceleration of electrons using light, a dielectric Laser Accelerator (DLA), and 3) novel materials and nano structuring for high efficiency solar cells and photo electrochemical water splitting for the generation of hydrogen.

#### ACADEMIC APPOINTMENTS

- Emeritus Faculty, Acad Council, Electrical Engineering
- Member, Bio-X
- Affiliate, Precourt Institute for Energy
- Affiliate, Stanford Woods Institute for the Environment
- Member, Wu Tsai Neurosciences Institute

#### HONORS AND AWARDS

- Fellow, IEEE (1988)
- Fellow, American Physical Society (1992)
- Fellow, Optical Society of America (2005)
- Fellow, Materials Research Society (2009)
- Morris Liebmann Award, IEEE (2000)
- Welker Medal, International Symposium on Compound Semiconductors (2000)
- Alexander Humboldt Senior Research Prize, Alexander Humboldt (1999)
- MBE Innovator Award, International MBE Conference (2008)
- Elected Member, National Academy of Engineering (2011)
- Aristotle Award, Semiconductor Research Corporation (2013)
- AI Cho MBE Award, International MBE Conference (2014)

#### PROGRAM AFFILIATIONS

- Stanford SystemX Alliance

## PROFESSIONAL EDUCATION

- PhD, Stanford University , Electrical Engineering (1969)
- MS, Stanford University , Electrical Engineering (1965)
- BS, Stanford University , Electrical Engineering (1964)

## LINKS

- <http://www-ee.stanford.edu/~harris>: <http://www-ee.stanford.edu/~harris>

## Teaching

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### COURSES

#### 2019-20

- Introduction to Human Values in Design: ME 115A (Aut)

#### 2018-19

- Principles and Models of Semiconductor Devices: EE 216 (Aut)

#### 2017-18

- Principles and Models of Semiconductor Devices: EE 216 (Aut)
- Semiconductor Optoelectronic Devices: EE 243 (Win)

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Payton Broaddus, Hongquan Li, Kelly Woo

#### Doctoral (Program)

Hongquan Li

## Publications

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### PUBLICATIONS

- **Strain-Induced Enhancement of Electroluminescence from Highly Strained Germanium Light-Emitting Diodes** *ACS PHOTONICS*  
Jiang, J., Xue, M., Lu, C., Fenrich, C. S., Morea, M., Zang, K., Gao, J., Cheng, M., Zhang, Y., Kamins, T. I., Harris, J. S., Sun, J.  
2019; 6 (4): 915–23
- **Silicon nitride waveguide as a power delivery component for on-chip dielectric laser accelerators** *OPTICS LETTERS*  
Tan, S., Zhao, Z., Urbanek, K., Hughes, T., Lee, Y., Fan, S., Harris, J. S., Byer, R. L.  
2019; 44 (2): 335–38
- **Improving characterization capabilities in new single-photon avalanche diode research.** *The Review of scientific instruments*  
Ding, X. n., Zang, K. n., Zheng, T. n., Fei, Y. n., Huang, M. n., Liu, X. n., Wang, Y. n., Jin, G. n., Huo, Y. n., Harris, J. S., Jiang, X. n.  
2019; 90 (4): 043108
- **Integrated photonics for NASA applications**  
Krainak, M., Stephen, M., Troupaki, E., Tedder, S., Reyna, B., Klamkin, J., Zhao, H., Song, B., Fridlander, J., Minh Tran, Bowers, J. E., Bergman, K., Lipson, M., et al  
SPIE-INT SOC OPTICAL ENGINEERING.2019
- **Electrically Tunable, CMOS-Compatible Metamaterial Based on Semiconductor Nanopillars** *ACS PHOTONICS*  
Morea, M., Zang, K., Kamins, T. I., Brongersma, M. L., Harris, J. S.  
2018; 5 (11): 4702–9

- **Epsilon-Near-Zero Si Slot-Waveguide Modulator** *ACS PHOTONICS*  
Liu, X., Zang, K., Kang, J., Park, J., Harris, J. S., Kik, P. G., Brongersma, M. L.  
2018; 5 (11): 4484–90
- **Design of a tapered slot waveguide dielectric laser accelerator for sub-relativistic electrons** *OPTICS EXPRESS*  
Zhao, Z., Hughes, T. W., Tan, S., Deng, H., Sapra, N., England, R., Vuckovic, J., Harris, J. S., Byer, R. L., Fan, S.  
2018; 26 (18): 22801–15
- **Elements of a dielectric laser accelerator** *OPTICA*  
McNeur, J., Kozak, M., Schoenenberger, N., Leedle, K. J., Deng, H., Ceballos, A., Hoogland, H., Ruehl, A., Hartl, I., Holzwarth, R., Solgaard, O., Harris, J. S., Byer, et al  
2018; 5 (6): 687–90
- **Pile-up correction in characterizing single-photon avalanche diodes of high dark count rate** *OPTICAL AND QUANTUM ELECTRONICS*  
Ding, X., Zang, K., Fei, Y., Zheng, T., Su, T., Morea, M., Jin, G., Harris, J. S., Jiang, X., Zhang, Q.  
2018; 50 (6)
- **On-Chip Laser-Power Delivery System for Dielectric Laser Accelerators** *PHYSICAL REVIEW APPLIED*  
Hughes, T. W., Tan, S., Zhao, Z., Sapra, N. V., Leedle, K. J., Deng, H., Miao, Y., Black, D. S., Solgaard, O., Harris, J. S., Vuckovic, J., Byer, R. L., Fan, et al  
2018; 9 (5)
- **Phase-dependent laser acceleration of electrons with symmetrically driven silicon dual pillar gratings** *OPTICS LETTERS*  
Leedle, K. J., Black, D. S., Miao, Y., Urbanek, K. E., Ceballos, A., Deng, H., Harris, J. S., Solgaard, O., Byer, R. L.  
2018; 43 (9): 2181–84
- **Carrier-selective interlayer materials for silicon solar cell contacts** *JOURNAL OF APPLIED PHYSICS*  
Xue, M., Islam, R., Chen, Y., Chen, J., Lu, C., Pleus, A., Tae, C., Xu, K., Liu, Y., Kamins, T. I., Saraswat, K. C., Harris, J. S.  
2018; 123 (14)
- **$\gamma$  Spatiotemporal characteristics of retinal response to network-mediated photovoltaic stimulation** *JOURNAL OF NEUROPHYSIOLOGY*  
Ho, E., Smith, R., Goetz, G., Lei, X., Galambos, L., Kamins, T. I., Harris, J., Mathieson, K., Palanker, D., Sher, A.  
2018; 119 (2): 389–400
- **Electrical and optical 3D modelling of light-trapping single-photon avalanche diode**  
Zheng, T., Zang, K., Morea, M., Xue, M., Lu, C., Jiang, X., Zhang, Q., Kamins, T. I., Harris, J. S., Witzigmann, B., Osinski, M., Arakawa, Y.  
SPIE-INT SOC OPTICAL ENGINEERING.2018
- **NASA Integrated Photonics**  
Krainak, M., Stephen, M., Klamkin, J., Bergman, K., Lipson, M., Mookherjea, S., Lesiher, P., Ho, S., Moslehi, B., Harris, J., Matsko, A., Savchenkov, A., Yoo, et al  
IEEE.2018
- **Investigation of Nickel Oxide as Carrier-selective Interlayer for Silicon Solar Cell Contacts**  
Xue, M., Islam, R., Chen, Y., Lu, C., Lyu, Z., Zang, K., Jia, J., Deng, H., Kamins, T., Saraswat, K., Harris, J., IEEE  
IEEE.2018: 2180–82
- **Comprehensive modeling on luminescent coupling dependency in multi-junction solar cells**  
Sun, Z., Lyu, Z., Jia, J., Xue, M., Chen, K., Fang, S., Harris, J. S., Witzigmann, B., Osinski, M., Arakawa, Y.  
SPIE-INT SOC OPTICAL ENGINEERING.2018
- **Contact Selectivity Engineering in a 2  $\mu$ m Thick Ultrathin c-Si Solar Cell Using Transition-Metal Oxides Achieving an Efficiency of 10.8.** *ACS applied materials & interfaces*  
Xue, M., Islam, R., Meng, A. C., Lyu, Z., Lu, C., Tae, C., Braun, M. R., Zang, K., McIntyre, P. C., Kamins, T. I., Saraswat, K. C., Harris, J. S.  
2017
- **First-principle Study for More Accurate Optical and Electrical Characterization of Ge<sub>1-x</sub>Sn<sub>x</sub> Alloy for Si and Group-IV Device Applications** *JOURNAL OF SEMICONDUCTOR TECHNOLOGY AND SCIENCE*  
Cho, Y., Cho, S., Park, B., Harris, J. S.  
2017; 17 (5): 675–84

- **Silicon single-photon avalanche diodes with nano-structured light trapping** *NATURE COMMUNICATIONS*  
Zang, K., Jiang, X., Huo, Y., Ding, X., Morea, M., Chen, X., Lu, C., Ma, J., Zhou, M., Xia, Z., Yu, Z., Kamins, T. I., Zhang, et al  
2017; 8: 628
- **Influence of Ballistic Electron Contributions in Vertically Integrated Resonant Tunneling Diodes** *Superlattices and Microstructures*  
Harris, J. S., Rascol, J., J. L., Martin, K., P., Carnahan, R., E., Higgins, R., J., Cury, L.  
; 2 (7): 147-150
- **How Adding Electrons Scrambles the Electronic Spectrum of a Quantum Dot**  
Harris, J. S., Patel, S., R., Stewart, D., R., Marcus, C., M., Gökcedag, M., Alhassid, Y.
- **A Solar Power System with Gallium Arsenide Solar Cells** *J. Energy*  
Madewell, J., F., Nussberger, A., A., Harris, J., S.
- **Passivation of multiple-quantum-well Ge<sub>0.97</sub>Sn<sub>0.03</sub>/Ge p-i-n photodetectors** *APPLIED PHYSICS LETTERS*  
Morea, M., Brendel, C. E., Zang, K., Suh, J., Fenrich, C. S., Huang, Y., Chung, H., Huo, Y., Kamins, T. I., Saraswat, K. C., Harris, J. S.  
2017; 110 (9)
- **Multifunctional, inexpensive, and reusable nanoparticle-printed biochip for cell manipulation and diagnosis.** *Proceedings of the National Academy of Sciences of the United States of America*  
Esfandyarpour, R., DiDonato, M. J., Yang, Y., Durmus, N. G., Harris, J. S., Davis, R. W.  
2017; 114 (8): E1306-E1315
- **Sub-optical-cycle control of free electrons by optical near-fields**  
Kozak, M., McNeur, J., Leedle, K. J., Deng, H., Schoenenberger, N., Ruehl, A., Hartl, I., Harris, J. S., Byer, R. L., Hommelhoff, P., IEEE  
IEEE.2017
- **Nanostructured Dielectric Layer for Ultrathin Crystalline Silicon Solar Cells** *INTERNATIONAL JOURNAL OF PHOTOENERGY*  
Chen, Y., Kang, Y., Jia, J., Huo, Y., Xue, M., Lyu, Z., Liang, D., Zhao, L., Harris, J. S.  
2017
- **Ge/SiGe Quantum-well Micro-bridges with High Tensile Strain**  
Xue, M., Chen, X., Chen, J., Kao, M., Shang, C., Zang, K., Huo, Y., Lu, C., Chen, Y., Deng, H., Kamins, T. I., Harris, J. S., IEEE  
IEEE.2017
- **Simulations of Taper Designs for Integrated Ge/SiGe Waveguide System**  
Lu, C., Zang, K., Huo, Y., Chen, X., Fei, E. T., Xue, M., Kamins, T. I., Harris, J. S., IEEE  
IEEE.2017
- **Surface textured silicon single-photon avalanche diode**  
Zang, K., Ding, X., Jiang, X., Huo, Y., Morea, M., Chen, X., Lu, C., Xue, M., Chen, Y., Shang, C., Kamins, T. I., Zhang, Q., Pan, et al  
IEEE.2017
- **Tensile-strained Ge/SiGe multiple quantum well microdisks** *Photonics Research*  
Chen, X., Fenrich, C. S., Xue, M., Kao, M., Zang, K., Lu, C., Fei, E. T., Chen, Y., Huo, Y., Kamins, T. I., Harris, J. S.  
2017; 5 (6): B7-B14
- **Strained Pseudomorphic Ge<sub>1-x</sub>Sn<sub>x</sub> Multiple Quantum Well Microdisk Using SiN<sub>y</sub> Stressor Layer** *ACS PHOTONICS*  
Fenrich, C. S., Chen, X., Chen, R., Huang, Y., Chung, H., Kao, M., Huo, Y., Kamins, T. I., Harris, J. S.  
2016; 3 (12): 2231-2236
- **Core-Shell Germanium/Germanium Tin Nanowires Exhibiting Room Temperature Direct- and Indirect-Gap Photoluminescence** *NANO LETTERS*  
Meng, A. C., Fenrich, C. S., Braun, M. R., McVittie, J. P., Marshall, A. F., Harris, J. S., McIntyre, P. C.  
2016; 16 (12): 7521-7529
- **Solar water splitting by photovoltaic-electrolysis with a solar-to-hydrogen efficiency over 30.** *Nature communications*  
Jia, J., Seitz, L. C., Benck, J. D., Huo, Y., Chen, Y., Ng, J. W., Bilir, T., Harris, J. S., Jaramillo, T. F.  
2016; 7: 13237-?
- **SiC protective coating for photovoltaic retinal prosthesis.** *Journal of neural engineering*

- Lei, X., Kane, S., Cogan, S., Lorach, H., Galambos, L., Huie, P., Mathieson, K., Kamins, T., Harris, J., Palanker, D.  
2016; 13 (4): 046016-?
- **Analysis of luminescent coupling effects in n series-connected multijunction solar cells** *PHYSICA STATUS SOLIDI A-APPLICATIONS AND MATERIALS SCIENCE*  
Mazouchi, M., Jia, J., Huo, Y., Miao, Y., Kang, Y., Chen, Y., Harris, J. S., Dutta, M.  
2016; 213 (4): 941-946
  - **Dry-wet digital etching of Ge<sub>1-x</sub>Sn<sub>x</sub>** *APPLIED PHYSICS LETTERS*  
Shang, C. K., Wang, V., Chen, R., Gupta, S., Huang, Y., Pao, J. J., Huo, Y., Sanchez, E., Kim, Y., Kamins, T. I., Harris, J. S.  
2016; 108 (6)
  - **Nanoelectronic three-dimensional (3D) nanotip sensing array for real-time, sensitive, label-free sequence specific detection of nucleic acids.** *Biomedical microdevices*  
Esfandyarpour, R., Yang, L., Koochak, Z., Harris, J. S., Davis, R. W.  
2016; 18 (1): 7-?
  - **Photovoltaic Pixels for Neural Stimulation: Circuit Models and Performance.** *IEEE transactions on biomedical circuits and systems*  
Boinagrov, D., Lei, X., Goetz, G., Kamins, T. I., Mathieson, K., Galambos, L., Harris, J. S., Palanker, D.  
2016; 10 (1): 85-97
  - **Interactions of Prosthetic and Natural Vision in Animals With Local Retinal Degeneration** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*  
Lorach, H., Lei, X., Galambos, L., Kamins, T., Mathieson, K., Dalal, R., Huie, P., Harris, J., Palanker, D.  
2015; 56 (12): 7444-7450
  - **Dielectric laser acceleration of sub-100 keV electrons with silicon dual-pillar grating structures** *OPTICS LETTERS*  
Leedle, K. J., Ceballos, A., Deng, H., Solgaard, O., Pease, R. F., Byer, R. L., Harris, J. S.  
2015; 40 (18): 4344-4347
  - **Investigation of germanium quantum-well light sources** *OPTICS EXPRESS*  
Fei, E. T., Chen, X., Zang, K., Huo, Y., Shambat, G., Miller, G., Liu, X., Dutt, R., Kamins, T. I., Vuckovic, J., Harris, J. S.  
2015; 23 (17): 22424-22430
  - **Epitaxial growth of GaP/AlGaP mirrors on Si for low thermal noise optical coatings** *OPTICAL MATERIALS EXPRESS*  
Lin, A. C., Bassiri, R., Omar, S., Markosyan, A. S., Lantz, B., Route, R., Byer, R. L., Harris, J. S., Fejer, M. M.  
2015; 5 (8): 1890-1897
  - **Performance of photovoltaic arrays in-vivo and characteristics of prosthetic vision in animals with retinal degeneration** *VISION RESEARCH*  
Lorach, H., Goetz, G., Mandel, Y., Lei, X., Kamins, T. I., Mathieson, K., Huie, P., Dalal, R., Harris, J. S., Palanker, D.  
2015; 111: 142-148
  - **Photovoltaic restoration of sight with high visual acuity** *NATURE MEDICINE*  
Lorach, H., Goetz, G., Smith, R., Lei, X., Mandel, Y., Kamins, T., Mathieson, K., Huie, P., Harris, J., Sher, A., Palanker, D.  
2015; 21 (5): 476-U254
  - **Photovoltaic restoration of sight with high visual acuity.** *Nature medicine*  
Lorach, H., Goetz, G., Smith, R., Lei, X., Mandel, Y., Kamins, T., Mathieson, K., Huie, P., Harris, J., Sher, A., Palanker, D.  
2015; 21 (5): 476-482
  - **Bias-dependence of luminescent coupling efficiency in multijunction solar cells** *OPTICS EXPRESS*  
Jia, J., Miao, Y., Kang, Y., Huo, Y., Mazouchi, M., Chen, Y., Zhao, L., Deng, H., Supaniratisai, P., AlQahtani, S. H., Harris, J. S.  
2015; 23 (7): A219-A231
  - **Microring bio-chemical sensor with integrated low dark current Ge photodetector** *APPLIED PHYSICS LETTERS*  
Zang, K., Zhang, D., Huo, Y., Chen, X., Lu, C., Fei, E. T., Kamins, T. I., Feng, X., Huang, Y., Harris, J. S.  
2015; 106 (10)
  - **Laser acceleration and deflection of 96.3 keV electrons with a silicon dielectric structure** *OPTICA*  
Leedle, K. J., Pease, R. F., Byer, R. L., Harris, J. S.  
2015; 2 (2): 158-161

- **Efficiency Enhancement of Gallium Arsenide Photovoltaics Using Solution-Processed Zinc Oxide Nanoparticle Light Scattering Layers** *JOURNAL OF NANOMATERIALS*  
Kang, Y., Liang, D., Mehra, S., Huo, Y., Chen, Y., Christoforo, M. G., Salleo, A., Harris, J. S.  
2015
- **Interactions of Prosthetic and Natural Vision in Animals With Local Retinal Degeneration.** *Investigative ophthalmology & visual science*  
Lorach, H. n., Lei, X. n., Galambos, L. n., Kamins, T. n., Mathieson, K. n., Dalal, R. n., Huie, P. n., Harris, J. n., Palanker, D. n.  
2015; 56 (12): 7444–50
- **Nanoscale Probing of Local Electrical Characteristics on MBE-Grown Bi#Te# Surfaces under Ambient Conditions.** *Nano letters*  
Macedo, R. J., Harrison, S. E., Dorofeeva, T. S., Harris, J. S., Kiehl, R. A.  
2015; 15 (7): 4241–47
- **On-chip plasmonic waveguide optical waveplate.** *Scientific reports*  
Gao, L., Huo, Y., Zang, K., Paik, S., Chen, Y., Harris, J. S., Zhou, Z.  
2015; 5: 15794-?
- **Photovoltaic Restoration of Sight with High Visual Acuity in Rats with Retinal Degeneration** *25th Conference on Ophthalmic Technologies held as a part of the SPIE Photonics West BiOS Meeting*  
Palanker, D., Goetz, G., Lorach, H., Mandel, Y., Smith, R., Boinagrov, D., Lei, X., KAMINS, T., Harris, J., Mathieson, K., Sher, A.  
SPIE-INT SOC OPTICAL ENGINEERING.2015
- **Controlled removal of amorphous Se capping layer from a topological insulator** *APPLIED PHYSICS LETTERS*  
Virwani, K., Harrison, S. E., Pushp, A., Topuria, T., Delenia, E., Rice, P., Kellock, A., Collins-McIntyre, L., Harris, J., Hesjedal, T., Parkin, S.  
2014; 105 (24)
- **Nanoelectronic impedance detection of target cells.** *Biotechnology and bioengineering*  
Esfandyarpour, R., Javanmard, M., Koochak, Z., Harris, J. S., Davis, R. W.  
2014; 111 (6): 1161-1169
- **Electrically driven subwavelength optical nanocircuits** *NATURE PHOTONICS*  
Huang, K. C., Seo, M., Sarmiento, T., Huo, Y., Harris, J. S., Brongersma, M. L.  
2014; 8 (3): 244-249
- **Demonstration of a Ge/GeSn/Ge Quantum-Well Microdisk Resonator on Silicon: Enabling High-Quality Ge(Sn) Materials for Micro- and Nanophotonics.** *Nano letters*  
Chen, R., Gupta, S., Huang, Y., Huo, Y., Rudy, C. W., Sanchez, E., Kim, Y., Kamins, T. I., Saraswat, K. C., Harris, J. S.  
2014; 14 (1): 37-43
- **Time-resolved photoluminescence studies of annealed 1.3- $\mu$ m GaInNAsSb quantum wells.** *Nanoscale research letters*  
Baranowski, M., Kudrawiec, R., Syperek, M., Misiewicz, J., Sarmiento, T., Harris, J. S.  
2014; 9 (1): 81-?
- **Surface-Normal Ge/SiGe Asymmetric Fabry-Perot Optical Modulators Fabricated on Silicon Substrates** *JOURNAL OF LIGHTWAVE TECHNOLOGY*  
Audet, R. M., Edwards, E. H., Balram, K. C., Claussen, S. A., Schaevitz, R. K., Tasyurek, E., Rong, Y., Fei, E. I., Kamins, T. I., Harris, J. S., Miller, D. A.  
2013; 31 (24): 3995-4003
- **Atomic layer deposition of Al<sub>2</sub>O<sub>3</sub> on germanium-tin (GeSn) and impact of wet chemical surface pre-treatment** *APPLIED PHYSICS LETTERS*  
Gupta, S., Chen, R., Harris, J. S., Saraswat, K. C.  
2013; 103 (24)
- **Silicon-compatible high-hole-mobility transistor with an undoped germanium channel for low-power application** *APPLIED PHYSICS LETTERS*  
Cho, S., Kang, I. M., Kim, K. R., Park, B., Harris, J. S.  
2013; 103 (22)
- **Simulation and fabrication of a new novel 3D injectable biosensor for high throughput genomics and proteomics in a lab-on-a-chip device.** *Nanotechnology*  
Esfandyarpour, R., Esfandyarpour, H., Harris, J. S., Davis, R. W.  
2013; 24 (46): 465301-?
- **Simulation and fabrication of a new novel 3D injectable biosensor for high throughput genomics and proteomics in a lab-on-a-chip device.** *Nanotechnology*

- Esfandyarpour, R., Esfandyarpour, H., Harris, J. S., Davis, R. W.  
2013; 24 (46): 465301-?
- **Single-cell photonic nanocavity probes.** *Nano letters*  
Shambat, G., Kothapalli, S., Provine, J., Sarmiento, T., Harris, J., Gambhir, S. S., Vuckovic, J.  
2013; 13 (11): 4999-5005
  - **Optical characterization of orientation-patterned GaP structures by micro reflectance difference spectroscopy** *JOURNAL OF APPLIED PHYSICS*  
Lastras-Martinez, L. F., Herrera-Jasso, R., Ulloa-Castillo, N. A., Balderas-Navarro, R. E., Lastras-Martinez, A., Lin, A. C., Fejer, M. M., Harris, J. S.  
2013; 114 (17)
  - **Ultra-Compact and Low-Loss Polarization Rotator Based on Asymmetric Hybrid Plasmonic Waveguide** *IEEE PHOTONICS TECHNOLOGY LETTERS*  
Gao, L., Huo, Y., Harris, J. S., Zhou, Z.  
2013; 25 (21): 2081-2084
  - **High-Efficiency Nanostructured Window GaAs Solar Cells.** *Nano letters*  
Liang, D., Kang, Y., Huo, Y., Chen, Y., Cui, Y., Harris, J. S.  
2013; 13 (10): 4850-4856
  - **Theoretical Analysis of GeSn Alloys as a Gain Medium for a Si-Compatible Laser** *IEEE JOURNAL OF SELECTED TOPICS IN QUANTUM ELECTRONICS*  
Dutt, B., Lin, H., Sukhdeo, D. S., Vulovic, B. M., Gupta, S., Nam, D., Saraswat, K. C., Harris, J. S.  
2013; 19 (5)
  - **Highly Selective Dry Etching of Germanium over Germanium-Tin (Ge<sub>1-x</sub>Sn<sub>x</sub>): A Novel Route for Ge<sub>1-x</sub>Sn<sub>x</sub> Nanostructure Fabrication.** *Nano letters*  
Gupta, S., Chen, R., Huang, Y., Kim, Y., Sanchez, E., Harris, J. S., Saraswat, K. C.  
2013; 13 (8): 3783-3790
  - **Real-time, continuous, fluorescence sensing in a freely-moving subject with an implanted hybrid VCSEL/CMOS biosensor** *BIOMEDICAL OPTICS EXPRESS*  
O'Sullivan, T. D., Heitz, R. T., Parashurama, N., Barkin, D. B., Wooley, B. A., Gambhir, S. S., Harris, J. S., Levi, O.  
2013; 4 (8): 1332-1341
  - **Label-free electronic probing of nucleic acids and proteins at the nanoscale using the nanoneedle biosensor** *BIOMICROFLUIDICS*  
Esfandyarpour, R., Javanmard, M., Koochak, Z., Esfandyarpour, H., Harris, J. S., Davis, R. W.  
2013; 7 (4)
  - **Cortical responses elicited by photovoltaic subretinal prostheses exhibit similarities to visually evoked potentials.** *Nature communications*  
Mandel, Y., Goetz, G., Lavinsky, D., Huie, P., Mathieson, K., Wang, L., Kamins, T., Galambos, L., Manivanh, R., Harris, J., Palanker, D.  
2013; 4: 1980-?
  - **Two-step growth of high quality Bi<sub>2</sub>Te<sub>3</sub> thin films on Al<sub>2</sub>O<sub>3</sub> (0001) by molecular beam epitaxy** *APPLIED PHYSICS LETTERS*  
Harrison, S. E., Li, S., Huo, Y., Zhou, B., Chen, Y. L., Harris, J. S.  
2013; 102 (17)
  - **Optical Emission of a Strained Direct-Band-Gap Ge Quantum Well Embedded Inside InGaAs Alloy Layers** *PHYSICAL REVIEW LETTERS*  
Pavarelli, N., Ochalski, T. J., Murphy-Armando, F., Huo, Y., Schmidt, M., Huyet, G., Harris, J. S.  
2013; 110 (17)
  - **Material characterization of high Sn-content, compressively-strained GeSn epitaxial films after rapid thermal processing** *JOURNAL OF CRYSTAL GROWTH*  
Chen, R., Huang, Y., Gupta, S., Lin, A. C., Sanchez, E., Kim, Y., Saraswat, K. C., Kamins, T. I., Harris, J. S.  
2013; 365: 29-34
  - **Enhancement of photoluminescence from GaInNAsSb quantum wells upon annealing: improvement of material quality and carrier collection by the quantum well** *JOURNAL OF PHYSICS-CONDENSED MATTER*  
Baranowski, M., Kudrawiec, R., Latkowska, M., Syperek, M., Misiewicz, J., Sarmiento, T., Harris, J. S.  
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