



## Theodore Kamins

Adjunct Professor

Hansen Experimental Physics Laboratory (HEPL)

### Bio

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#### BIO

Ted received his degrees from the University of California, Berkeley. He then joined the Research and Development Laboratory of Fairchild Semiconductor, where he worked with epitaxial and polycrystalline silicon before moving to Hewlett-Packard Laboratories, where he worked on numerous semiconductor material and device topics. Before moving to Stanford, he was a Principal Scientist at Hewlett-Packard in the Information and Quantum Systems Laboratory, where he conducted research on advanced nanostructured electronic and sensing materials and devices.

Ted is co-author with R. S. Muller of the textbook "Device Electronics for Integrated Circuits" and is author of the book "Polycrystalline Silicon for Integrated Circuits and Displays." He is a Fellow of the IEEE and a Fellow of the Electrochemical Society. He has taught at the University of California, Berkeley, and at Stanford University and has been an Associate Editor of the IEEE Transactions on Electron Devices.

#### CURRENT ROLE AT STANFORD

Adjunct Professor, Electrical Engineering

Researcher, Hansen Experimental Physics Laboratory (HEPL)

#### ACADEMIC APPOINTMENTS

- Adjunct Professor, Electrical Engineering

#### HONORS AND AWARDS

- Distinguished Alumni Award in Electrical Engineering, Dept. of Electrical Engineering and Computer Science, University of California, Berkeley (2016)
- Fellow, Electrochemical Society
- Fellow, IEEE

#### PROFESSIONAL EDUCATION

- PhD, University of California, Berkeley, Electrical Engineering (Solid-State Electronics)
- MS, University of California, Berkeley, Electrical Engineering
- BS, University of California, Berkeley, Electrical Engineering

#### LINKS

- Linked In: <https://www.linkedin.com/in/tedkamins>
- Palanker group: <http://web.stanford.edu/~palanker/lab/group.html>

- Harris Group: [http://snowweb.stanford.edu/home\\_main.php](http://snowweb.stanford.edu/home_main.php)

## Research & Scholarship

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### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Ted is guiding research on epitaxial Si and Ge deposition for optical interconnects and medical sensing, on photodiode arrays for retinal prosthesis, and on other applications of advanced semiconductor processing techniques.

### PROJECTS

- Photovoltaic arrays for retinal prostheses - Stanford University - Departments of Electrical Engineering and Ophthalmology; Hansen Experimental Physics Laboratory
- Group IV materials for optical interconnects - Stanford University - Department of Electrical Engineering

## Teaching

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### COURSES

#### 2019-20

- Chemical Vapor Deposition and Epitaxy for Integrated Circuits and Nanostructures: EE 292C (Spr)

#### 2018-19

- Chemical Vapor Deposition and Epitaxy for Integrated Circuits and Nanostructures: EE 292C (Win)

#### 2017-18

- Chemical Vapor Deposition and Epitaxy for Integrated Circuits and Nanostructures: EE 292C (Win)

## Professional

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### WORK EXPERIENCE

- Principal Scientist - Hewlett-Packard Laboratories
- Member Research Staff - Fairchild Semiconductor, Research and Development Laboratory
- Acting Assistant Professor - University of California, Berkeley

## Publications

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### PUBLICATIONS

- **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
- **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
- **Photovoltaic retinal prosthesis: implant fabrication and performance** *JOURNAL OF NEURAL ENGINEERING*  
Wang, L., Mathieson, K., Kamins, T. I., Loudin, J. D., Galambos, L., Goetz, G., Sher, A., Mandel, Y., Huie, P., Lavinsky, D., Harris, J. S., Palanker, D. V.  
2012; 9 (4)
- **Photovoltaic retinal prosthesis with high pixel density** *NATURE PHOTONICS*  
Mathieson, K., Loudin, J., Goetz, G., Huie, P., Wang, L., Kamins, T. I., Galambos, L., Smith, R., Harris, J. S., Sher, A., Palanker, D.  
2012; 6 (6): 391-397

- **Integration of Self-Assembled Metal-Catalyzed Semiconductor Nanowires for Sensors and Large-Area Electronics** *IEEE TRANSACTIONS ON ELECTRON DEVICES*  
Kamins, T. I.  
2008; 55 (11): 3096-3106
- **Strong quantum-confined Stark effect in germanium quantum-well structures on silicon** *NATURE*  
Kuo, Y. H., Lee, Y. K., Ge, Y. S., Ren, S., Roth, J. E., Kamins, T. I., Miller, D. A., Harris, J. S.  
2005; 437 (7063): 1334-1336
- **Structural characteristics and connection mechanism of gold-catalyzed bridging silicon nanowires** *JOURNAL OF CRYSTAL GROWTH*  
Sharma, S., Kamins, T. I., Islam, M. S., Williams, R. S., Marshall, A. F.  
2005; 280 (3-4): 562-568
- **Device Electronics for Integrated Circuits**  
Muller, R. S., Kamins, T. I.  
John Wiley and Sons.2003
- **Polycrystalline Silicon for Integrated Circuits and Displays**  
Kamins, T.  
Kluwer Academic Publishers.1998
- **REDUCTION IN MISFIT DISLOCATION DENSITY BY THE SELECTIVE GROWTH OF SI11-XGEX/SI IN SMALL AREAS** *APPLIED PHYSICS LETTERS*  
Noble, D. B., Hoyt, J. L., King, C. A., Gibbons, J. F., Kamins, T. I., Scott, M. P.  
1990; 56 (1): 51-53
- **SMALL-GEOMETRY, HIGH-PERFORMANCE, SI-SI11-XGEX HETEROJUNCTION BIPOLAR-TRANSISTORS** *IEEE ELECTRON DEVICE LETTERS*  
Kamins, T. I., Nauka, K., KRUGER, J. B., Hoyt, J. L., King, C. A., Noble, D. B., GRONET, C. M., Gibbons, J. F.  
1989; 10 (11): 503-505
- **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
- **Grating Acuity of Prosthetic Vision in Blind Rats Matches the Pixel Pitch of Photovoltaic Subretinal Arrays Below 50 mu m**  
Ho, E., Lorach, H., Huang, T., Lei, X., Flores, T., Kamins, T., Galambos, L., Mathieson, K., Palanker, D. V.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2018
- **Optimization of pillar electrodes in subretinal prosthesis for enhanced proximity to target neurons** *JOURNAL OF NEURAL ENGINEERING*  
Flores, T., Lei, X., Huang, T., Lorach, H., Dalal, R., Galambos, L., Kamins, T., Mathieson, K., Palanker, D.  
2018; 15 (3)
- **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)
- **Temporal structure in spiking patterns of ganglion cells defines perceptual thresholds in rodents with subretinal prosthesis** *SCIENTIFIC REPORTS*  
Ho, E., Lorach, H., Goetz, G., Laszlo, F., Lei, X., Kamins, T., Mariani, J., Sher, A., Palanker, D.  
2018; 8: 3145
- **γ 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
- **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

- **Contact Selectivity Engineering in a 2 μm 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
- **Germanium Quantum Well QCSE Waveguide Modulator With Tapered Coupling in Distributed Modulator-Detector System** *JOURNAL OF LIGHTWAVE TECHNOLOGY*  
Zang, K., Lu, C., Chen, X., Fei, E., Xue, M., Claussen, S., Morea, M., Chen, Y., Dutt, R., Huo, Y., Kamins, T. I., Harris, J. S.  
2017; 35 (21): 4629–33
- **High-sensitivity silicon ultraviolet p plus -i-n avalanche photodiode using ultra-shallow boron gradient doping** *APPLIED PHYSICS LETTERS*  
Xia, Z., Zang, K., Liu, D., Zhou, M., Kim, T., Zhang, H., Xue, M., Park, J., Morea, M., Ryu, J., Chang, T., Kim, J., Gong, et al  
2017; 111 (8)
- **Photovoltaic Subretinal Prosthesis with Pixel Sizes Down to 40 μm**  
Lei, X., Huang, T., Flores, T., Lorach, H., Galambos, L., Kamins, T., Harris, J., Mathieson, K., Palanker, D. V.  
ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2017
- **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)
- **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
- **Ultra-Thin Crystalline Silicon Solar Cells with Nickel Oxide Interlayer as Hole-selective Contact**  
Xue, M., Islam, R., Chen, J., Lyu, Z., Chen, Y., DeWitt, D., Pleus, A., Tae, C., Lu, C., Zang, K., Jia, J., Huo, Y., Kamins, et al  
IEEE.2017: 1835–37
- **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
- **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
- **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
- **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-?
- **Electromodulation spectroscopy of direct optical transitions in Ge<sub>1-x</sub>Sn<sub>x</sub> layers under hydrostatic pressure and built-in strain** *JOURNAL OF APPLIED PHYSICS*  
Dybala, F., Elazna, K. Z., Maczko, H., Gladysiewicz, M., Misiewicz, J., Kudrawiec, R., Lin, H., Chen, R., Shang, C., Huo, Y., Kamins, T. I., Harris, J. S.  
2016; 119 (21)
- **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)
- **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

- **Structural and optical properties of axial silicon-germanium nanowire heterojunctions** *JOURNAL OF APPLIED PHYSICS*  
Wang, X., Tsybeskov, L., Kamins, T. I., Wu, X., Lockwood, D. J.  
2015; 118 (23)
- **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
- **Contrast Sensitivity With a Subretinal Prosthesis and Implications for Efficient Delivery of Visual Information** *INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCIENCE*  
Goetz, G., Smith, R., Lei, X., Galambos, L., Kamins, T., Mathieson, K., Sher, A., Palanker, D.  
2015; 56 (12): 7186-7194
- **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
- **Monolithic integration of germanium-on-insulator p-i-n photodetector on silicon** *OPTICS EXPRESS*  
Nam, J. H., Afshinmanesh, F., Nam, D., Jung, W. S., Kamins, T. I., Brongersma, M. L., Saraswat, K. C.  
2015; 23 (12): 15816-15823
- **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): 476-482
- **Lateral overgrowth of germanium for monolithic integration of germanium-on-insulator on silicon** *JOURNAL OF CRYSTAL GROWTH*  
Nam, J. H., Alkis, S., Nam, D., Afshinmanesh, F., Shim, J., Park, J., Brongersma, M., Okyay, A. K., Kamins, T. I., Saraswat, K.  
2015; 416: 21-27
- **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)
- **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
- **A New Electro-Absorption Modulator Structure Based on Ge/SiGe Coupled Quantum Wells for On-Chip Optical Interconnects** *Conference on Nanophotonics and Micro/Nano Optics II*  
Chen, Y., Chen, X., Huo, Y., Lu, C., Fei, E. T., Zang, K., Shang, C., Kang, Y., Jia, J., Kamins, T. I., Harris, J. S.  
SPIE-INT SOC OPTICAL ENGINEERING.2014
- **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
- **Large-scale arrays of nanomechanical sensors for biomolecular fingerprinting** *SENSORS AND ACTUATORS B-CHEMICAL*  
Guthy, C., Belov, M., Janzen, A., Quitoriano, N. J., Singh, A., Wright, V. A., Finley, E., Kamins, T. I., Evoy, S.  
2013; 187: 111-117
- **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-?
- **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
- **Low-voltage broad-band electroabsorption from thin Ge/SiGe quantum wells epitaxially grown on silicon** *OPTICS EXPRESS*  
Edwards, E. H., Lever, L., Fei, E. T., Kamins, T. I., Ikonic, Z., Harris, J. S., Kelsall, R. W., Miller, D. A.  
2013; 21 (1): 867-876
  - **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-?
  - **Structural and Optical Properties of Si/Ge Nanowire Heterojunctions** *5th International Symposium on Graphene, Ge/III-V and Emerging Materials For Post-CMOS Applications at the 223rd Meeting of the Electrochemical-Society (ECS)*  
Tsybeskov, L., Chang, H., Mala, S., Kamins, T. I., Wu, X., Lockwood, D. J.  
ELECTROCHEMICAL SOC INC.2013: 215-24
  - **In-vivo Performance of Photovoltaic Subretinal Prosthesis** *Conference on Ophthalmic Technologies XXIII as a part of the SPIE Photonics West BiOS Meeting*  
Mandel, Y., Goetz, G., Lavinsky, D., Huie, P., Mathieson, K., Wang, L., Kamins, T., Manivanh, R., Harris, J., Palanker, D.  
SPIE-INT SOC OPTICAL ENGINEERING.2013
  - **Ge/SiGe asymmetric Fabry-Perot quantum well electroabsorption modulators** *OPTICS EXPRESS*  
Edwards, E. H., Audet, R. M., Fei, E. T., Claussen, S. A., Schaevitz, R. K., Tasyurek, E., Rong, Y., Kamins, T. I., Harris, J. S., Miller, D. A.  
2012; 20 (28): 29164-29173
  - **Selective area growth of germanium and germanium/silicon-germanium quantum wells in silicon waveguides for on-chip optical interconnect applications** *OPTICAL MATERIALS EXPRESS*  
Claussen, S. A., Balram, K. C., Fei, E. T., Kamins, T. I., Harris, J. S., Miller, D. A.  
2012; 2 (10): 1336-1342
  - **Room-temperature electroluminescence from germanium in an Al<sub>0.3</sub>Ga<sub>0.7</sub>As/Ge heterojunction light-emitting diode by Gamma-valley transport** *OPTICS EXPRESS*  
Cho, S., Park, B., Yang, C., Cheung, S., Yoon, E., Kamins, T. I., Ben Yoo, S. J., Harris, J. S.  
2012; 20 (14): 14921-14927
  - **Room-temperature electroluminescence from germanium in an Al(0.3)Ga(0.7)As/Ge heterojunction light-emitting diode by G-valley transport.** *Optics express*  
Cho, S., Park, B., Yang, C., Cheung, S., Yoon, E., Kamins, T. I., Yoo, S. J., Harris, J. S.  
2012; 20 (14): 14921-14927
  - **Structural and optical characterization of SixGe1-x-ySny alloys grown by molecular beam epitaxy** *APPLIED PHYSICS LETTERS*  
Lin, H., Chen, R., Lu, W., Huo, Y., Kamins, T. I., Harris, J. S.  
2012; 100 (14)
  - **Low-temperature growth of Ge1-xSnx thin films with strain control by molecular beam epitaxy** *THIN SOLID FILMS*  
Lin, H., Chen, R., Huo, Y., Kamins, T. I., Harris, J. S.  
2012; 520 (11): 3927-3930
  - **Ge/SiGe Quantum Well Waveguide Modulator Monolithically Integrated With SOI Waveguides** *IEEE PHOTONICS TECHNOLOGY LETTERS*  
Ren, S., Rong, Y., Claussen, S. A., Schaevitz, R. K., Kamins, T. I., Harris, J. S., Miller, D. A.  
2012; 24 (6): 461-463
  - **Investigation of the direct band gaps in Ge1-xSnx alloys with strain control by photoreflectance spectroscopy** *APPLIED PHYSICS LETTERS*  
Lin, H., Chen, R., Lu, W., Huo, Y., Kamins, T. I., Harris, J. S.  
2012; 100 (10)
  - **Simple Electroabsorption Calculator for Designing 1310 nm and 1550 nm Modulators Using Germanium Quantum Wells** *IEEE JOURNAL OF QUANTUM ELECTRONICS*  
Schaevitz, R. K., Edwards, E. H., Roth, J. E., Fei, E. T., Rong, Y., Wahl, P., Kamins, T. I., Harris, J. S., Miller, D. A.  
2012; 48 (2): 187-197
  - **Intermixing during Ripening in Ge-Si Incoherent Epitaxial Nanocrystals** *JOURNAL OF PHYSICAL CHEMISTRY C*

- Leite, M. S., Kamins, T. I., Williams, R. S., Medeiros-Ribeiro, G.  
2012; 116 (1): 901-907
- **Light Emission in Ge Quantum Wells** *Conference on Lasers and Electro-Optics (CLEO)*  
Fei, E. T., Huo, Y., Shambat, G., Chen, X., Liu, X., Claussen, S. A., Edwards, E. H., Kamins, T. I., Miller, D. A., Vuckovic, J., Harris, J. S.  
IEEE.2012
  - **MBE growth of tensile-strained Ge quantum wells and quantum dots** *Front. Optoelectron. Chin. Online*  
Huo, Y., Lin, H., Chen, R., Rong, Y., Kamins, T. I., Harris, J. S.  
2012
  - **MBE Growth of GeSn and SiGeSn Heterojunctions for Photonic Devices** *5th SiGe, Ge, and Related Compounds - Materials, Processing and Devices Symposium held at the 220th Meeting of the Electrochemical-Society (ECS)*  
Harris, J. S., Lin, H., Chen, R., Huo, Y., Fei, E., Paik, S., Cho, S., Kamins, T.  
ELECTROCHEMICAL SOC INC.2012: 601-5
  - **A New Approach to Ge Lasers with Low Pump Power** *25th IEEE Photonics Conference (IPC)*  
Chen, X., Huo, Y., Fei, E. T., Shambat, G., Zang, K., Liu, X., Chen, Y., Kamins, T. I., Vuckovic, J., Harris, J. S.  
IEEE.2012: 60-61
  - **Optical properties of Ge<sub>1-z</sub>Sn<sub>z</sub>/SixGe<sub>1-x</sub>ySn<sub>y</sub> heterostructures** *25th IEEE Photonics Conference (IPC)*  
Lin, H., Chen, R., Lu, W., Huo, Y., Kamins, T. I., Harris, J. S.  
IEEE.2012: 919-920
  - **Photovoltaic retinal prosthesis for restoring sight to the blind: implant design and fabrication** *Conference on Micromachining and Microfabrication Process Technology XVII*  
Wang, L., Mathieson, K., Kamins, T. I., Loudin, J., Galambos, L., Harris, J. S., Palanker, D.  
SPIE-INT SOC OPTICAL ENGINEERING.2012
  - **Selective-Area Growth of Ge and Ge/SiGe Quantum Wells in 3  $\mu$  m Silicon-on-Insulator Waveguides** *Conference on Lasers and Electro-Optics (CLEO)*  
Claussen, S. A., Balram, K. C., Fei, E. T., Kamins, T. I., Harris, J. S., Miller, D. A.  
IEEE.2012
  - **Silicon-compatible compound semiconductor tunneling field-effect transistor for high performance and low standby power operation** *APPLIED PHYSICS LETTERS*  
Cho, S., Kang, I. M., Kamins, T. I., Park, B., Harris, J. S.  
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  - **Increased photoluminescence of strain-reduced, high-Sn composition Ge<sub>1-x</sub>Sn<sub>x</sub> alloys grown by molecular beam epitaxy** *APPLIED PHYSICS LETTERS*  
Chen, R., Lin, H., Huo, Y., Hitzman, C., Kamins, T. I., Harris, J. S.  
2011; 99 (18)
  - **Fabrication and Analysis of Epitaxially Grown Ge<sub>1-x</sub>Sn<sub>x</sub> Microdisk Resonator With 20-nm Free-Spectral Range** *IEEE PHOTONICS TECHNOLOGY LETTERS*  
Cho, S., Chen, R., Koo, S., Shambat, G., Lin, H., Park, N., Vuckovic, J., Kamins, T. I., Park, B., Harris, J. S.  
2011; 23 (20)
  - **Design Optimization of a Type-I Heterojunction Tunneling Field-Effect Transistor (I-HTFET) for High Performance Logic Technology** *JOURNAL OF SEMICONDUCTOR TECHNOLOGY AND SCIENCE*  
Cho, S., Sun, M., Kim, G., Kamins, T. I., Park, B., Harris, J. S.  
2011; 11 (3): 182-189
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