

# Yasser Khan

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## Summary

Ph.D. candidate in Electrical Engineering and Computer Sciences with research interests in flexible and printed electronic systems. Currently, focusing on flexible bioelectronic and biophotonic sensors for wearable medical devices. Passionate about interdisciplinary projects that bridge engineering, materials science, and biology.

## Research Interests

Wearable Electronics, Bioelectronics, Flexible Electronics, Printed Electronics, Flexible Hybrid Electronics, Sensors.

## Education

**Ph.D. in Electrical Engineering and Computer Sciences**  
GPA 3.95/4.00, Concentration: *Physical Electronics*.

University of California, Berkeley, CA, USA

Dec '18



Thesis: Wearable medical sensors enabled by printed bioelectronics and biophotonics.

Advisor: [Professor Ana Claudia Arias](#).

**M.S. in Electrical Engineering**  
GPA 3.92/4.00, Concentration: *Optoelectronics and Photonics*.

KAUST, KSA

Dec '12



Thesis: Light management in optoelectronic devices with disordered and chaotic structures.

Advisor: [Professor Boon Ooi](#); Co-Advisor: [Professor Andrea Fratalocchi](#).

**B.S. in Electrical Engineering**  
GPA 3.98/4.00, *Summa Cum Laude*, Concentration: *Electronics*.

University of Texas at Dallas, TX, USA

May '10



Senior Design Project: Wireless embedded control system for atomically precise manufacturing.

Faculty Advisor: [Professor Murat Torlak](#); Industry Advisor: [John Randall, PhD](#).

## Research Experience

**Postdoctoral Scholar in Chemical Engineering**

Stanford University, CA, USA

Jan '19–Present



Advisor: [Professor Zhenan Bao](#).

**Ph.D. Student**

University of California, Berkeley, CA, USA

Jul '13–Dec '18



- **Printed biophotonic sensors for blood and tissue oximetry**  
Demonstrated a flexible organic reflectance oximeter array capable of 2D oxygenation mapping of blood and tissue [1]. Developed the first printed organic optoelectronic sensor for transmission-mode pulse oximetry [2]. Additionally, reported a reflection-mode organic oximeter probe for pulse oximetry on the wrist [7].
- **Printed bioelectronic sensors for electrocardiography (ECG), electromyography (EMG), and bioimpedance spectroscopy**  
Developed a fabrication process for producing thin, printed, and flexible electrode arrays that non-invasively map pressure-induced tissue damage via bioimpedance spectroscopy, even when such damage cannot be visually observed [5, 6]. Also, demonstrated printed electrode arrays for wearable ECG and EMG [3].
- **Integration of printed sensors to flexible hybrid electronics for wearable health monitoring**  
Developed a wearable sensor patch composed of inkjet-printed gold ECG electrodes and a stencil-printed nickel oxide thermistor to record ECG and human body temperature [3].
- **Other Responsibilities: Designing and maintaining the group website: [arias.berkeley.edu](http://arias.berkeley.edu).**

Advisor: [Professor Ana Claudia Arias](#).

**University of California, Berkeley, CA, USA**

*Oct '12–Jun '13*



### Research Intern

- **Printed optoelectronic probe for pulse oximetry**  
Developed hardware and software for interfacing conventional electronics with organic light-emitting diodes (OLEDs) and organic photodiodes (OPDs) for measuring blood oxygen saturation [2].

Advisor: [Professor Ana Claudia Arias](#).

**Oxford University, OX, UK**

*Jul '11–Aug '11*



### Research Intern

- **Enhancing light scattering and absorption in dye-sensitized solar cells (DSSCs) with air voids in  $TiO_2$  nano-spheres**  
With Mie theory and T-matrix formulation calculated scattering properties of air voids in  $TiO_2$  nano-spheres. Optimized air void sizes and concentrations for greater efficiencies in DSSCs.

Math Advisor: [James Kirkpatrick, PhD](#); Physics Advisor: [Professor Henry Snaith](#).

**KAUST, KSA**

*Sep '10–Jul '12*



### Graduate Student Researcher

- **Energy harvesting in complex systems**  
Experimentally investigated light trapping capabilities of deformed microstructures for energy harvesting [13].
- **Zinc oxide (ZnO) nanorods for simultaneous light trapping and transparent electrode applications in solar cells**  
Studied light concentrating properties of ZnO nanorods, and at the same time evaluated those for using as transparent electrodes [10].
- **Electrochemical etching of tungsten tips for scanning tunneling microscopy (STM) and atomic force microscopy (AFM)**  
Etched ultra-sharp metallic tips for scanning probe microscopy. [12].
- **Other Responsibilities: Designing and maintaining the group website: [photonics.kaust.edu.sa](http://photonics.kaust.edu.sa).**

Advisor: [Professor Boon Ooi](#); Co-Advisor: [Professor Andrea Fratalocchi](#).

**Stanford University, CA, USA**

*Jul '10–Aug '10*



### Research Intern

- **Silver nanowire transparent electrodes for replacing existing Indium Tin Oxide (ITO) transparent electrodes in organic solar cells**  
Worked on solution synthesis to produce  $10\mu\text{m}$  length silver nanowires. Developed a Matlab tool to analyze the electrical response of silver nanowires, and wrote an image processing program for processing SEM images of nanowires.

MSE Advisor: [Professor Yi Cui](#); EE Advisor: [Professor Peter Peumans](#).



- [Computer controlled electrochemical etcher to produce extremely sharp tips for use in STM](#)

Developed hardware and software for an automated electrochemical tip etcher. Zyvex Labs commercialized the etcher as [Zetcher](#).

Advisor: [Joshua Ballard](#), PhD.

## Publications

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Please check [google scholar](#) for the up-to-date publications list.

### Journal Articles

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- [1] **Yasser Khan**, Donggeon Han, Adrien Pierre, Jonathan Ting, Xingchun Wang, Claire M Lochner, Gianluca Bovo, Nir Yaacobi-Gross, Chris Newsome, Richard Wilson, and Ana C Arias. A flexible organic reflectance oximeter array. *Proceedings of the National Academy of Sciences*, 115(47):E11015–E11024, 2018. doi: [10.1073/pnas.1813053115](#). **Media coverage:**[Physics World](#),[UC Berkeley News Center](#),[KCBS Radio](#),[Innovators Magazine](#),[The Engineer \(UK\)](#),[Medgadget](#),[ScienceDaily](#),and many more.
- [2] Claire M Lochner\*, **Yasser Khan\***, Adrien Pierre\*, and Ana C Arias. All-organic optoelectronic sensor for pulse oximetry. *Nature communications*, 5:5745, 2014. doi: [10.1038/ncomms6745](#). \***Equal contribution.** **Media coverage:**[UC Berkeley Grad News](#),[NSF Science 360 News](#),[UC Berkeley News Center](#),[Phys.Org](#),[ScienceDaily](#),[MSN News](#),[Yahoo News](#),and many more.
- [3] **Yasser Khan**, Mohit Garg, Qiong Gui, Mark Schadt, Abhinav Gaikwad, Donggeon Han, Natasha AD Yamamoto, Paul Hart, Robert Welte, William Wilson, Steve Czarnecki, Mark Poliks, Zhanpeng Jin, Kanad Ghose, Frank Egitto, James Turner, and Ana C Arias. Flexible hybrid electronics: Direct interfacing of soft and hard electronics for wearable health monitoring. *Advanced Functional Materials*, 26(47):8764–8775, 2016. doi: [10.1002/adfm.201603763](#).
- [4] **Yasser Khan**, Aminy E Ostfeld, Claire M Lochner, Adrien Pierre, and Ana C Arias. Monitoring of vital signs with flexible and wearable medical devices. *Advanced Materials*, 28(22):4373–4395, 2016. doi: [10.1002/adma.201504366](#).
- [5] **Yasser Khan\***, Felipe J Pavinatto\*, Monica C Lin, Amy Liao, Sarah L Swisher, Kaylee Mann, Vivek Subramanian, Michel M Maharbiz, and Ana C Arias. Inkjet-printed flexible gold electrode arrays for bioelectronic interfaces. *Advanced Functional Materials*, 26(7):1004–1013, 2016. doi: [10.1002/adfm.201503316](#). **Cover article.**
- [6] Sarah L Swisher, Monica C Lin, Amy Liao, Elisabeth J Leeftang, **Yasser Khan**, Felipe J Pavinatto, Kaylee Mann, Agne Naujokas, David Young, Shuvo Roy, Michael R Harrison, Ana C Arias, Vivek Subramanian, and Michel M Maharbiz. Impedance sensing device enables early detection of pressure ulcers in vivo. *Nature communications*, 6:6575, 2015. doi: [10.1038/ncomms7575](#). **Media coverage:**[BBC News](#),[UC Berkeley News Center](#),[Futurity](#),[NSF News](#),[ACM Communications](#),and many more.
- [7] Donggeon Han, **Yasser Khan**, Jonathan Ting, Simon M King, Nir Yaacobi-Gross, Martin J Humphries, Christopher J Newsome, and Ana C Arias. Flexible blade-coated multicolor polymer light-emitting diodes for optoelectronic sensors. *Advanced Materials*, 29(22):1606206, 2017. doi: [10.1002/adma.201606206](#).
- [8] Donggeon Han, **Yasser Khan**, Karthik Gopalan, Adrien Pierre, and Ana C Arias. Emission area patterning of organic light-emitting diodes (oleds) via printed dielectrics. *Advanced Functional Materials*, 28(37):1802986, 2018. doi: [10.1002/adfm.201802986](#).

- [9] Aminy E Ostfeld, Abhinav M Gaikwad, **Yasser Khan**, and Ana C Arias. High-performance flexible energy storage and harvesting system for wearable electronics. **Scientific reports**, 6:26122, 2016. doi: [10.1038/srep26122](https://doi.org/10.1038/srep26122).
- [10] Abhinav M Gaikwad, **Yasser Khan**, Aminy E Ostfeld, Shishir Pandya, Sameer Abraham, and Ana Claudia Arias. Identifying orthogonal solvents for solution processed organic transistors. **Organic Electronics**, 30:18–29, 2016. doi: [10.1016/j.orgel.2015.12.008](https://doi.org/10.1016/j.orgel.2015.12.008). **Solvents visualization program is available in the Downloads section: <http://arias.berkeley.edu/downloads/>**.
- [11] Leeya Engel, Chengming Liu, Nofar Mintz Hemed, **Yasser Khan**, Ana Claudia Arias, Yosi Shacham-Diamand, Slava Krylov, and Liwei Lin. Local electrochemical control of hydrogel microactuators in microfluidics. **Journal of Micromechanics and Microengineering**, 28(105005), 2018. doi: [10.1088/1361-6439/aacc31](https://doi.org/10.1088/1361-6439/aacc31).
- [12] **Yasser Khan**, Hisham Al-Falih, Yaping Zhang, Tien Khee Ng, and Boon S Ooi. Two-step controllable electrochemical etching of tungsten scanning probe microscopy tips. **Review of Scientific Instruments**, 83(6):063708, 2012. doi: [10.1063/1.4730045](https://doi.org/10.1063/1.4730045).
- [13] Changxu Liu, Andrea Di Falco, D Molinari, **Yasser Khan**, Boon S Ooi, Thomas F Krauss, and Andrea Fratalocchi. Enhanced energy storage in chaotic optical resonators. **Nature Photonics**, 7(6):473, 2013. doi: [10.1038/nphoton.2013.108](https://doi.org/10.1038/nphoton.2013.108). **Cover article. Media coverage: [EurekAlert!](#), [nanowerk](#), [Photonics.com](#), [ScienceDaily](#), [Phys.Org](#), and many more.**
- [14] Varun Soman, **Yasser Khan**, Madina Zabran, Mark Schadt, Paul Hart, Michael Shay, Frank Egitto, Konstantinos Papathomas, Natasha AD Yamamoto, Donggeon Han, Ana C Arias, Kanad Ghose, Mark D Poliks, and James N Turner. Reliability challenges in fabrication of flexible hybrid electronics for human performance monitors: A system level study. 201X. **Submitted**.
- [15] Jonathan Ting\*, Natasha Yamamoto\*, **Yasser Khan\***, and Ana C Arias. Screen-printed nickel oxide thermistor arrays. 201X. **In preparation**.
- [16] Ali Moin, Andy Zhou, Abbas Rahimi, Simone Benatti, Alisha Menon, Senam Tamakloe, Jonathan Ting, Natasha Yamamoto, **Yasser Khan**, Fred Burghardt, Luca Benini, Ana C Arias, and Jan M Rabaey. A brain-inspired emg gesture recognition system with flexible, high-density sensors and high-dimensional classifier. 201X. **In preparation**.
- [17] Xiaodong Wu, **Yasser Khan**, Jonathan Ting, Juan Zhu, Seiya Ono, Xinxing Zhang, Canhui Lu, and Ana C. Arias. Large-area compliant, sensitive and highly tunable pressure sensors for versatile human-machine interaction. 201X. **In preparation**.
- [18] **Yasser Khan\***, Donggeon Han\*, Jonathan Ting\*, Maruf Ahmed\*, Ramune Nagisetty, and Ana C Arias. Organic multi-channel optoelectronic sensors for smart wristbands. 201X. **In preparation**.

## Conference Proceedings .....

- [1] **Yasser Khan**, Donggeon Han, Adrien Pierre, Jonathan Ting, Xingchun Wang, Claire M. Lochner, and Ana C. Arias. System design for flexible all-organic reflectance oximeter. In *MRS Spring Meeting, Phoenix, AZ, USA*, 2018.
- [2] Donggeon Han, **Yasser Khan**, Karthik Gopalan, and Ana C. Arias. Emission area patterning of blade-coated organic light-emitting diodes (oleds) via printed dielectrics. In *MRS Spring Meeting, Phoenix, AZ, USA*, 2018.
- [3] Ali Moin, Andy Zhou, Abbas Rahimi, Simone Benatti, Alisha Menon, Senam Tamakloe, Jonathan Ting, Natasha Yamamoto, **Yasser Khan**, Fred Burghardt, and others. An emg gesture recognition system with flexible high-density sensors and brain-inspired high-dimensional classifier. In *Circuits and Systems (ISCAS), 2018 IEEE International Symposium on*, pages 1–5. IEEE, 2018. doi: [10.1109/ISCAS.2018.8351613](https://doi.org/10.1109/ISCAS.2018.8351613).

- [4] Mark Poliks, James Turner, Kanad Ghose, Zhanpeng Jin, Mohit Garg, Qiong Gui, Ana Arias, Yasser Kahn, Mark Schadt, and Frank Egitto. A wearable flexible hybrid electronics ecg monitor. In *Electronic Components and Technology Conference (ECTC), 2016 IEEE 66th*, pages 1623–1631. IEEE, 2016. doi: [10.1109/ECTC.2016.395](https://doi.org/10.1109/ECTC.2016.395).
- [5] **Y. Khan** and A. C. Arias. Flexible electrode arrays for bioelectronic interfaces. In *Flexible and Printed Electronics Conference, CA, USA, 2016*.
- [6] **Yasser Khan**, Mark Schadt, Mohit Garg, Qiong Gui, Paul Hart, Robert Welte, Stephen Cain, Bill Wilson, Zhanpeng Jin, Mark Poliks, Kanad Ghose, Steve Czarnecki, Frank Egitto, James Turner, and Ana Claudia Arias. Inkjet-printed sensors for wearable health monitoring. In *MRS Fall Meeting, Boston, MA, USA, 2015*. **Best Oral Presentation Award**.
- [7] **Y. Khan**, M. Garg, M. Schadt, Q. Gui, P. Hart, Z. Jin, M. Poliks, R. Welte, S. Czarnecki, F. Egitto, K. Ghose, J. Turner, and A. C. Arias. Interfacing printed sensors to conventional electronics for wearable sensor patch. In *Flexible and Printed Electronics Conference, CA, USA, 2015*.
- [8] Amy Liao, Monica C Lin, Lauren C Ritz, Sarah L Swisher, David Ni, Kaylee Mann, **Yasser Khan**, Shuvo Roy, Michael R Harrison, Ana C Arias, Vivek Subramanian, David Young, and Michel M Maharbiz. Impedance sensing device for monitoring ulcer healing in human patients. In *Engineering in Medicine and Biology Society (EMBC), 2015 37th Annual International Conference of the IEEE*, pages 5130–5133. IEEE, 2015. doi: [10.1109/EMBC.2015.7319546](https://doi.org/10.1109/EMBC.2015.7319546).
- [9] **Yasser Khan**, Adrien Pierre, Claire Lochner, and Ana C. Arias. All-organic green light pulse oximeter for wearable medical sensing. In *MRS Fall Meeting, Boston, MA, USA, 2014*.
- [10] **Yasser Khan**, Yaping Zhang, Muhammad Amin, A Bayraktaroglu, Tien Khee Ng, H Bağcı, J Phillips, and Boon S Ooi. ZnO nanorods for simultaneous light trapping and transparent electrode application in solar cells. In *Photonics Conference (PHO), 2011 IEEE*, pages 619–620. IEEE, 2011. doi: [10.1109/PHO.2011.6110700](https://doi.org/10.1109/PHO.2011.6110700).
- [11] Hisham Al-Falih, **Yasser Khan**, Yaping Zhang, Damain Pablo San-Roman-Alerigi, Dongkyu Cha, Boon Siew Ooi, and Tien Khee Ng. Fabrication of tuning-fork based afm and stm tungsten probe. In *High Capacity Optical Networks and Enabling Technologies (HONET), 2011*, pages 190–192. IEEE, 2011. doi: [10.1109/HONET.2011.6149815](https://doi.org/10.1109/HONET.2011.6149815).
- [12] **Yasser Khan**, Josh Ballard, Yaping Zhang, Justin Alexander, Miles Larkin, and Boon Ooi. Facile method for fabricating reproducible tungsten probe tips with varying cone angles. In *International Conference on Materials for Advanced Technologies (ICMAT), 2011*.
- [13] **Yasser Khan** and John Randall. Wireless embedded control system for atomically precise manufacturing. In *Information Technology: New Generations (ITNG), 2011 Eighth International Conference on*, pages 965–969. IEEE, 2011. doi: [10.1109/ITNG.2011.165](https://doi.org/10.1109/ITNG.2011.165).

## Poster Presentations

- [1] Jonathan Ting\*, Natasha Yamamoto\*, **Yasser Khan\***, Abhinav Gaikwad, and Ana Claudia Arias. Fully screen-printed nio thermistor arrays. In *Flexible Electronics Conference and Exhibition - 2018 FLEX, Monterey, CA, USA, February 2018*. **Best Poster Award**.
- [2] **Yasser Khan**, Felipe Pavinatto, and Ana Claudia Arias. Flexible printed circuit board for wearable physiological monitoring. In *MRS Spring Meeting, San Francisco, CA, USA, April 2014*. **Nominated for Best Poster Award**.
- [3] **Yasser Khan**, Adrien Pierre, Claire Lochner, and Ana Claudia Arias. Printed pulse oximeter for wearable medical sensor patch. In *NASCENT IAB Meeting, Austin, TX, USA., January 2014*. **Best Poster Award**.



- [4] **Yasser Khan**, Changxu Liu, Diego Molinari, Boon Ooi, and Andrea Fratalocchi. Energy harvesting in complex systems. In *Electrical Engineering Days, King Abdullah University of Science and Technology.*, February 2012. **Best Poster Award.**
- [5] **Yasser Khan**, Josh Ballard, Justin Alexander, Miles Larkin, and Boon Ooi. Controllable electrochemical etching of tungsten stm tips. In *First WEP Research Poster Session, King Abdullah University of Science and Technology.*, January 2011. **Best Poster Award.**
- [6] **Yasser Khan**, Yaping Zhang, Muhammad Amin, Tien Khee Ng, Jamie Phillips, Hakan Bagci, and Boon Ooi. ZnO nanorods for simultaneous light trapping and transparent electrode application in solar cells. In *First Graduate Research Symposium, King Abdullah University of Science and Technology.*, May 2011. **Best Poster Award.**

## Patents

- [1] Ana Claudia Arias, Claire Lochner, Adrien Pierre, and **Yasser Khan**. Reflectance based pulse oximetry systems and methods, jun 8 2017. US Patent App. 15/414,397.
- [2] Michel Maharbiz, Vivek Subramanian, Ana Claudia Arias, Sarah Swisher, Amy Liao, Monica Lin, Felipe Pavinatto, **Yasser Khan**, Daniel Cohen, Elisabeth Leeflang, and others. Methods and apparatus for monitoring wound healing using impedance spectroscopy, jun 8 2017. US Patent App. 15/379,220.
- [3] Claire Meyer Lochner, Rachel Nancollas, Jacob Sadie, **Yasser Khan**, and Ana Claudia Arias. Flexible, non-invasive real-time hematoma monitoring system using near-infrared spectroscopy, may 3 2018. US Patent App. 15/852,366.

## Invited Talks

- [1] **Yasser Khan**. Integration of printed sensors to flexible hybrid electronics for wearable health monitoring, March 2018. University of Southern California.
- [2] **Yasser Khan**. Integration of printed sensors to flexible hybrid electronics for wearable health monitoring, February 2018. Purdue University.

## Successful Co-authored Grant Applications

- o \$700,000 funding from NextFlex, America's Flexible Hybrid Electronics (FHE) Manufacturing Institute for a project proposed by UC Berkeley, UCSD, and Jabil Circuits to develop "Integration Processes for Flexible and Wearable Wound Monitoring and Therapeutic Bandage" 2017–2018
- o \$375,000 funding from Intel Corporation via. Semiconductor Research Corporation Grant No. 2014-IN-2571 for a project proposed by UC Berkeley to develop "Printable and Flexible Electronics for Wearable System Integration" 2015–2017
- o \$425,000 funding from Nano-Bio Manufacturing Consortium (NBMC), an industry-academia partnership with the United States Air Force Research Laboratory (AFRL), for a project proposed by Binghamton University, UC Berkeley, and electronics packaging firm i3 Electronics, Inc. (Endicott, N.Y.) to develop "Electronics and Biometric Sensor Platforms for Human Performance Monitoring (HPM)" 2014–2015

## Honors and Distinctions

### Research Awards / Honors:

- Best Poster Award**, Flex 2018 Conference, Monterey, CA, USA Feb '18
- Best Project Award**, Systems On Nanoscale Information fabriCs (SONIC) Year 5 Annual Review Meeting, Urbana, IL, USA Oct '17

Best Oral Presentation Award, MRS Fall Meeting, Boston, MA, USA	Dec '15
Best Poster Award, NASCENT IAB Meeting, UT Austin, TX, USA	Jan '14
Best Poster Award, EE – Photonics Track, Electrical Engineering Days, KAUST	Feb '12
Finalist, DOW Sustainability Innovation Student Challenge	Sep '11
Best Poster Award, First Graduate Research Symposium, KAUST	May '11
Best Poster Award, Winter Enrichment Period Research Poster Session, KAUST	Jan '11

### Academic Awards / Honors:

EECS Departmental Fellowship, UC Berkeley	Sep '13
Academic Excellence Award, (Top 5% in Graduating Class), KAUST	Dec '11
KAUST Provost Award, (Top 15% in Matriculating Class), KAUST	Nov '10
KAUST Graduate Fellowship	May '10
Phi Kappa Phi, Honor Society, (Top 10% in Graduating Class), UT Dallas	May '10
Dean's List, All Semesters, (Top 10% in Erik Jonsson School of ECS), UT Dallas	May '10
Golden Key Honor Society, (Top 15% in School of ECS), UT Dallas	Dec '09
KAUST Discovery Scholarship	Oct '08
Academic Excellence Scholarship, UT Dallas	Apr '08
Undergraduate Scholarship for three years, OIC	May '05
Merit Scholarships, Education Board, Government of Bangladesh, (Top 1% in Graduating Class)	Dec '01, '03, '05

## Technical skills

### Fabrication and Characterization:

**Fabrication:** Dimatix, Ceradrop, Screen Printing, Automatic Film Applicator. **Microscopy:** SEM - FEI Quanta 600, Confocal Microscopy, AFM, TEM.

**Optical Characterization:** UV-Vis, Raman and PL - Horiba, Ellipsometry. **Electrical Characterization:** Cascade, B1500A Semiconductor Device Parameter Analyzer.

### Software Skills:

**Programming:** C/C++, Python, Matlab.

**Open-Source:** MEEP, LAMMPS, Paraview, MSTM, Voro++, L<sup>A</sup>T<sub>E</sub>X, Git.

**OS:** Unix, Ubuntu, Windows.

**Software Applications:** Comsol, L-Edit, SEMulator3D.

### Hardware Skills:

**Prototyping and PCB:** Eagle.

**MCUs and MPUs:** Arduino, Gumstix, MSP 430, Nordic nRF51.

## Professional Activities

Ad Hoc Reviewer, Nature Journals	'14 – Present
Ad Hoc Reviewer, Proceedings of the National Academy of Sciences, PNAS	'15 – Present
Reviewer, American Institute of Physics (AIP) Journals	'10 – Present
Reviewer, Institute of Electrical and Electronics Engineers (IEEE) Journals	'13 – Present
Reviewer, Springer Journals	'11 – Present
Materials Research Society (MRS), Student Member	'13 – Present
Institute of Electrical and Electronics Engineers (IEEE), Student Member	'06 – '10
American Physical Society (APS), Student Member	'09 – '10

## Relevant Graduate Courses

**Semiconductor Devices:** Integrated-Circuit Devices, Solid State Devices, Electronic and Optical Properties of Semiconductors. **Optoelectronics and Photonics:** Semiconductor Optoelectronic Devices, Semiconductor Lasers and LEDs, Photonics, Advanced Topics in Wave Propagation.

**Bioelectronics:** Introductory Electronic Transducers Laboratory, Brain-Machine Interface Systems. **Biophotonics:** Principles of Molecular and Cellular Biophotonics.

## Teaching

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Lab / Content TA, EE 16A, Designing Information Devices and Systems I, UC Berkeley

*Fall '17*

Lab / Content TA, EE 16A, Designing Information Devices and Systems I, UC Berkeley

*Spring '17*

Lab TA, EE 306, Electronic and Optical Properties of Semiconductors, KAUST

*Fall '12*

## References

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- **Ana Claudia Arias**, PhD  
Professor, Electrical Engineering and Computer Sciences, UC Berkeley.  
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- **Boon Ooi**, PhD  
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- **Ramune Nagisetty**  
Senior Principal Engineer, Technology and Innovation Office, Intel.  
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- **Joshua Ballard**, PhD  
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- **Tien Khee Ng**, PhD  
Center Manager (Solid State Lighting TIC), KAUST.  
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- **James Kirkpatrick**, PhD  
Research Scientist, Google DeepMind.  
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- **John Randall**, PhD  
President, Zyvex Labs.  
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