



PROFESSIONAL POSITIONS:

- 2014 – present **Assistant Professor**, *Department of Electrical and Computer Engineering, University of Illinois at Urbana Champaign, IL, USA*
Affiliate Faculty, *Micro and Nanotechnology Laboratory, University of Illinois at Urbana Champaign, IL, USA*
Research Interest: Advanced compound semiconductor devices
- 2011 – 2014 **Postdoctoral Research Scientist**, *IBM Research, Thomas J. Watson Research Center, Yorktown Heights, NY, USA*
Research Area: III-V devices (light emitting diodes, solar cells, transistors) and co-integration with silicon, flexible thin film devices, epitaxial graphene

EDUCATION:

- 2005 – 2011 Ph.D. ([Electrical Engineering](#)) [Northwestern University](#), Illinois, USA
Ph.D. focus on Solid State Devices and Photonics
- 2001 – 2005 B.S. ([Electrical Engineering](#)) [Bilkent University](#), Ankara, TURKEY
B.S. focus on Physical Electronics

SELECT RESEARCH HONORS, AWARDS, & RECOGNITION:

- **(2018) IEEE Nanotechnology Council Early Career Award in Nanotechnology** (awarded annually to *one in the world* - by [IEEE Nanotechnology Council](#))
- **(2018) Dean's Award for Excellence in Research for Assistant Professor** (*awarded to 5 assistant professors amongst the entire pool of 135+ (tenure-track) [College of Engineering](#) assistant professors, judged by the best research during the last academic year*)
- **(2017) NSF CAREER Award** (awarded to 156 scientists amongst > 3,050 applicants (success rate of ~5%) by [National Science Foundation](#) and includes a \$500K grant funding for five-years for the project titled “*CAREER: Cubic Phase Light Emitting Diodes for Advanced Solid State Lighting*”)
- **(2016) AFOSR Young Investigator Award** (awarded to 56 scientists amongst > 265 applicants (success rate of ~20%) by [Air Force Office of Scientific Research](#) and includes a \$360K grant funding for three-years for the project titled “*Investigating Heteroepitaxy Principles and Transport Characteristics of Vertically-Integrated GaN-on-Graphene Heterostructures*”)
- **(2016) IEEE Society Senior Membership Elevation** (awarded to *only 9% of IEEE's approximately 428,000 members*, which requires extensive experience, and reflects professional maturity and documented achievements of significance)
- **(2014) IEEE Electron Devices Society Early Career Award** (awarded annually to *one in the world* - by [IEEE Electron Devices Society](#))
- **(2014) Docent (Associate Professor)** title in Electrical Engineering from the [Turkish Council of Higher Education](#)
- **(2014, 2013, 2013) IBM Invention Achievement Awards** (by [International Business Machines Corporation](#))



- **(2013) SPIE Society Senior Membership Elevation** for significant technical accomplishments in GaN devices and for significant contributions as an educator in the field of electronics, optics, and photonics.
- **(2012) Best Paper Award** at Infrared Optoelectronics Materials and Devices Conference, (*MIOMD-XI*) (co-chaired by Franklin Medal Laureate Prof. Manijeh Razeghi, Nobel Laureates Profs. Leo Esaki, and Klaus von Klitzing)
- **(2010) IBM Ph.D. Fellowship** (awarded annually to *select researchers in the world* by [International Business Machines Corporation](#))
- **(2010) Link Foundation Energy Fellowship** (awarded annually to *three in USA and Canada* by [Link Foundation](#))
- **(2010) IEEE Electron Devices Society PhD Fellowship** (awarded annually to *three in the world* - one in USA - by [IEEE Electron Devices Society](#))
- **(2009) Boeing Engineering Student of the Year** (awarded annually to *one in the world* by [Boeing Company](#))
- **(2009) IEEE Photonics Society Graduate Student Fellowship** (awarded annually to *twelve in the world* - seven in USA - by [IEEE Photonics Society](#))
- **(2009) SPIE Laser Technology, Engineering and Applications Scholarship** (awarded annually to *one in the world* - third top recognition - by [SPIE Society](#))
- **(2009) Ludo Frevel Crystallography Scholarship** (awarded annually to *ten in the world* by [ICDD](#))
- **(2008) Dow Sustainability Innovation Award** (awarded to *one in select worldwide universities* by [Dow Chemical Company](#))

SELECT TEACHING HONORS, AWARDS, & RECOGNITIONS:

- **(2015) Collins Scholar** (The Academy for Excellence in Engineering Education, College of Engineering, UIUC)

SELECT RESEARCH ACCOMPLISHMENTS:

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|------|--|---|
| 2018 | ACS Photonics (IN PRESS)
- HIGHLIGHTED BY 3+ NEWS AGENCIES | ○ Record internal quantum efficiency (of 29%) ultraviolet emission from cubic GaN |
| 2017 | IEEE Electron Device Lett. 38 (8) 1094 – 1096
- HIGHLIGHTED BY SEMICONDUCTORTODAY | ○ First integrated GaN HEMTs on CMOS-Si platform |
| 2017 | J. Appl. Phys. 121, 245109 | ○ First theory capturing the uniaxial nature of wurtzite semiconductors for transport |
| 2017 | J. Phys. D: Appl. Phys. 50, 055103
- HIGHLIGHTED BY 20+ NEWS AGENCIES | ○ GaN-on-Si technology for 200-mm scalability |
| 2016 | APL 109, 151904 | ○ A new passive cooling technology for GaN power devices |



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|------|---|---|
| 2016 | APL 109, 042103
- HIGHLIGHTED BY 20+ NEWS AGENCIES | <ul style="list-style-type: none">○ First cubic GaN-on-Si(100)○ Cubic Phase GaN via Phase-transition○ Entire cubic phase GaN surface coverage by aspect ratio patterning |
| 2014 | Nat. Commun. 5, 4836
- DOWNLOADED > 1,000 TIMES IN FIRST TWO WEEKS | <ul style="list-style-type: none">○ Thinnest/Flexible light emitting diode○ First GaN-on-Graphene technology○ Demonstration of graphene as a cleave layer○ Demonstration of an infinitely-reusable substrate |
| 2014 | Adv. Funct. Mater. 24 (28), 4492
-FRONTISPIECE COVER | <ul style="list-style-type: none">○ First polarization-free visible emitters○ First CMOS-compatible integration of GaN on Si (100) substrates (8-inch) |
| 2013 | Appl. Phys. Express 6, 112301 | <ul style="list-style-type: none">○ New class of vertical/thin-film LEDs enabled via mechanical release |
| 2013 | Adv. Energy Mater. 3, 566
-INSIDE COVER ARTICLE | <ul style="list-style-type: none">○ Highest specific power (≥ 1995 W/kg) flexible III-V tandem solar cells |
| 2013 | APL 102, 011106 | <ul style="list-style-type: none">○ Highest power ultraviolet LED on Si |
| 2012 | APL 100, 053901
-EDITOR'S PICK 2012
-TOP 20 MOST READ | <ul style="list-style-type: none">○ Highest efficiency Ge/GaAs/InGaP- based thin film solar cell |
| 2010 | APL 97, 181109 | <ul style="list-style-type: none">○ First reliable GaN-based resonant tunneling diode |
| 2009 | APL 95, 131109 | <ul style="list-style-type: none">○ First mid-infrared GaN-based intersubband device |
| 2009 | AP A 96, 403 | <ul style="list-style-type: none">○ First green emitting InGaN quantum dots |
| 2008 | APL 93, 08111
-TOP 20 MOST READ | <ul style="list-style-type: none">○ First ZnO-InGaN hybrid light emitting diodes |
| 2008 | APL 93, 211107 | <ul style="list-style-type: none">○ Highest efficiency AlGaN-based ultraviolet detector |
| 2007 | APL 91, 041104 | <ul style="list-style-type: none">○ First AlGaN-based ultraviolet single photon detector |

SELECT ARTICLES ABOUT RESEARCH THAT HAVE APPEARED IN POPULAR PRESS AND JOURNALS:

- “Hexagonal-to-cubic phase transition in GaN via aspect ratio nano-patterning of silicon substrate”, [SemiconductorToday](#) 01/19/2018.
- “Phase-transition Cubic GaN Doubles UV Efficiency”, [CompoundSemiconductor](#) 01/15/2018.
- “Towards gallium nitride integration with silicon CMOS”, [SemiconductorToday](#) 07/26/2017.



- “GaN-on-Silicon for scalable high electron mobility transistors”, [ScienceDaily](#), [EurekAlert](#), [CompoundSemiconductor](#), [SemiconductorToday](#), [R&D Magazine](#), [ElectroIQ](#), [Physics.org](#) 01/09/2017.
- “Thinner Is Cooler For GaN Devices”, [Compound Semiconductor](#), 10/11/16.
- “Making green LEDs more efficient and brighter”, [EETimes Europe](#), 08/12/2016.
- “Cubic GaN-on-Si Makes More Efficient Green LEDs, According to Researchers”, [Solid State Lighting](#), 08/01/2016.
- “UIUC uses MOCVD growth of cubic GaN on silicon to boost efficiency and brightness of green LEDs”, [Semiconductor Today](#), 08/01/2016.
- “US Researchers Make Better Green LEDs With Cubic GaN-On-Silicon”, [Compound Semiconductor](#), 07/30/16.
- “New method for making green LEDs enhances their efficiency and brightness”, highlighted by 20+ press organizations including [Science Daily](#), [EurekAlert](#), [Science Newline Technology](#), [Physics.org](#) 7/30/2016.
- “Big Blue Ambition”, [Compound Semiconductor](#), 10/2014.
- “IBM Shows Graphene as Epi Template”, [Solid State Technology](#), 10/2014.
- “Van der Waals epitaxy of GaN and blue LEDs”, [Semiconductor Today](#), 10/2014.
- “Graphene gets another real use – blue LED fabrication”, [Electronics Weekly](#), 10/2014.
- “IBM Conquers Wafer-Scale Graphene”, [EE Times](#), 10/2014.
- “Growing single-crystalline materials on reusable graphene”, [IBM Research](#), 09/2014.
- “US Researchers Use Graphene To Make Flexible Blue LEDs On Plastic”, [Compound Semiconductor](#), 09/2014.
- “Exfoliated single-crystalline GaN films grown on graphene lead to new types of LEDs”, [Laser Focus World](#), 09/2014.
- “Cubic Phase GaN on Nano-grooved Si (100) via Maskless Selective Area Epitaxy”, [FRONTISPIECE COVER](#), [Advanced Functional Materials](#), 07/2014.
- “Growing cubic and hexagonal GaN on standard (100) silicon substrates”, [Semiconductor Today](#), 05/2014.
- “GaN On CMOS-Compatible On-Axis Silicon (100) For Hetero-Integration”, [Power Electronics World](#), 04/2014.
- “Polarisation-free GaN shows promise for visible photonics”, [Compound Semiconductor](#), 04/2014.
- “Ultra-Light High-Efficiency Flexible InGaP/(In)GaAs Tandem Solar Cells on Plastic”, [INSIDE COVER](#), [Advanced Energy Materials](#), 05/2013.
- “High-efficiency thin-film InGaP/InGaAs/Ge tandem solar cells enabled by controlled spalling technology”, [TOP 20 Most Downloaded Articles](#), *Applied Physics Letters*, 02/2012. [Editor's Choice 2012](#): Selected as one of "The Best of Papers of 2012" published in *Applied Physics Letters*, the most cited journal in *Applied Physics*.
- “UV APD improved by m-plane free-standing GaN substrate”, [Semiconductor Today](#), 05/26/2010.
- “Nitrides push performance of UV photodiodes”, [Laser Focus World](#), 9/2009.



- “ZnO does away with green-LED problem”, [Laser Focus World](#), 11/2008.
- “ZnO/GaN hybrid shows green LED promise”, [Compound Semiconductor](#), 11/2008.
- “A hybrid green light emitting diode comprised of n-ZnO/(InGaN/GaN)/ multi- quantum-wells/ p-GaN”, [TOP 20 Most Downloaded Articles](#), *Applied Physics Letters*, 09/2008.
- “Tiny Avalanche Photodiode Detects Single UV Photons”, [ScienceDaily](#), 1/2/2008.
- “Tiny Avalanche Photodiodes Target Bioterrorism Agents”, [Science Daily](#), 09/14/2005.

PROFESSIONAL AND HONORARY SOCIETIES:

Senior Member	2016-present	IEEE Electron Devices Society (<i>member since 2009</i>)
Senior Member	2016-present	IEEE Photonics Society (<i>member since 2007</i>)
Senior Member	2016-present	IEEE Society (<i>member since 2005</i>)
Senior Member	2013-present	SPIE Society (<i>member since 2006</i>)
Member	2009-present	Electrochemical Society (ECS)
Member	2009-present	American Association for the Advancement of Science
Member	2008-present	American Physical Society (APS)
Member	2008-present	Materials Research Society (MRS)
Member	2005-present	Optical Society of America (OSA)

PROFESSIONAL ACTIVITIES:

Proposal Reviewer	German Research Foundation, 2018
	Croatian Science Foundation, 2017
	French National Research Agency, 2017
	Singapore National Research Foundation, 2017
	Advanced Research Projects Agency – Energy, 2018, 2017
	National Science Foundation (NSF), 2018, 2017, 2013
	Air Force Office of Scientific Research (AFOSR), 2017, 2016
	Israeli Ministry of Science, Technology and Space, 2017
	Dutch Research Council, 2016
	European Research Council (ERC), 2015
Department of Energy (DOE), 2012	
Conference Co-Chair	SPIE Optics + Photonics, <i>San Diego, USA, August 28-Sept. 1, 2016</i>
	SPIE Optics + Photonics, <i>San Diego, USA, August 9-13, 2015</i>
Conference Organizing Committee	SPIE Photonics West, <i>San Francisco, USA, February, 2018</i>
	International Conference on Electron Devices and Solid-State Circuits, <i>Taipei, October, 2017</i>
	SPIE Optics + Photonics, <i>San Diego, USA, August 6-10, 2017</i>
	CNST 14th Annual Nanotechnology Workshop, University of Illinois at Urbana-Champaign, <i>IL, USA, May 5-6, 2016</i>
	SPIE NanoScience + Engineering, <i>San Diego, USA, August 9-13, 2015</i>
	SPIE Photonics West, <i>San Francisco, USA, February 7-12, 2015</i>
	SPIE Photonics West, <i>San Francisco, USA, February 1-6, 2014</i>
	OPTIC, <i>Chungli City, TAIWAN, Dec 5-7, 2013</i>



Session Chair	SPIE Photonics West, 2018, 2017, 2010 International Workshop on Nitrides, 2016
Fellowship Committee	SPIE Scholarship, 2017 to present Link Foundation, 2013, 2014, 2015, 2016
Technical Committee	EDS Optoelectronic Devices, 2017 to present
Editorial Board	Recent Patents on Nanotechnology, 2014 to present International Journal of Nanomedicine and Nanosurgery, 2015 to 2018
Journal Referee	ACS Journals (<i>ACS Nano</i>); APS Journals (<i>Applied Physics Letters, Journal of Applied Physics, AIP Advances</i>); OSA Journals (<i>Optics Express, Optical Materials Express, Optics Letters, Journal of the Optical Society of America A, Applied Optics</i>); IOP Journals (<i>Reports on Progress in Physics, New Journal of Physics, Journal of Physics D, Nanotechnology, Semiconductor Science and Technology</i>); IEEE Journals (<i>Electron Device Letters, Journal of Quantum Electronics, Transactions on Electron Devices, Photonics Technology Letters, Photonics Letters</i>); ECS Journals (<i>Journal of the Electrochemical Society, Electrochemical and Solid-State Letters, Solid State Letters, Measurement Science and Technology, Solid State Science and Technology</i>); Elsevier Journals (<i>Superlattices and Microstructures, Materials Chemistry and Physics, Solid State Electronics, Thin Solid Films</i>); Nature Journals (<i>Nature, Scientific Reports</i>); Springer Journals (<i>Applied Physics B</i>); Wiley Journals (<i>Advanced Materials, Advanced Functional Materials, Laser & Photonics Reviews</i>)

SERVICE TO UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN:

MNTL Search Committee / Diversity Advocate	2017/09 to present
<i>Grants and Contracts Specialist</i>	
MNTL Search Committee	2017/04 to 2017/07
<i>Visiting Research Scientist</i>	
MNTL Search Committee / Diversity Advocate	2016/04 to present
<i>MOCVD Research Engineer Position</i>	
MNTL Search Committee Chair	2015/12 to 2016/10
<i>Cleanroom Manager Position</i>	
MNTL Search Committee / Diversity Advocate	2015/04 to 2016/06
<i>Research (Etch) Engineer Position</i>	
MNTL Equipment Committee Chair,	2015/01 to present
ECE Curriculum Committee,	2014 Fall to present
ECE Colloquium Committee,	2014 Fall to present
ECE Qualifying Exam Committee,	(11 students)
ECE Preliminary Exam Committee,	(7 students)
ECE PhD Final Exam Committee,	(4 student)
Mentor, ARISE (Academic Redshirt in Science and Engineering) Program,	2017 – present
Panelist, ECE Town Hall	2017 Fall
Reviewer, Andrew T. Yang Research and Entrepreneurship Award	2017
Judge, Undergraduate Research Symposium	2017 Spring
HKN Power Lunch	2017 Spring
Judge, Introduce a Girl to Engineering Day,	2017 Spring
Judge, Introduce a Girl to Engineering Day,	2016 Spring



Session Chair, BioNanotechnology Summer Institute, 2015 Summer
Judge, Promoting Undergraduate Research in Engineering (PURE), 2014 Fall

SERVICE TO OTHER UNIVERSITIES:

EECS PhD Final Exam Committee, 2015 Spring to present (2 students)
(Northwestern University, IL, USA)
EECS Qualifying Exam Committee, 2011 Fall to present (1 students)
(Northwestern University, IL, USA)

TEACHING / COURSES:

ECE 397 Individual Study in ECE Problems,	2018 Spring	(Supervision of 1 Student)
ECE 496 Senior Research Project,	2018 Spring	(Supervision of 1 Student)
ECE 498 CB LEDs and Solar Cells,	2018 Spring	(Class of 19 Students)
ECE 445 Senior Design Laboratory,	2017 Fall	(Class of 33 Students)
ECE 297 Individual Study in ECE Problems,	2017 Fall	(Supervision of 1 Student)
ECE 397 Individual Study in ECE Problems,	2017 Fall	(Supervision of 1 Student)
ECE 340 Semiconductor Electronics,	2017 Spring	(Class of 46 Students)
ECE 397 Individual Study in ECE Problems,	2017 Spring	(Supervision of 3 Students)
ECE 497 Senior Research Project,	2017 Spring	(Supervision of 2 Students)
ECE 498 CB LEDs and Solar Cells,	2017 Spring	(Class of 10 Students)
ECE 340 Semiconductor Electronics,	2016 Fall	(Class of 20 Students)
ECE 396 Individual Study in ECE Problems,	2016 Fall	(Supervision of 1 Student)
ECE 397 Individual Study in ECE Problems,	2016 Fall	(Supervision of 2 Students)
ECE 496 Senior Research Project,	2016 Fall	(Supervision of 2 Students)
ECE 498 CB LEDs and Solar Cells,	2016 Spring	(Class of 23 Students)
ECE 396 Individual Study in ECE Problems,	2016 Spring	(Supervision of 3 Students)
ECE 397 Individual Study in ECE Problems,	2016 Spring	(Supervision of 3 Students)
ECE 499 Senior Thesis,	2016 Spring	(Supervision of 2 Students)
ECE 340 Semiconductor Electronics,	2015 Fall	(Class of 46 Students)
ECE 397 Individual Study in ECE Problems,	2015 Fall	(Supervision of 4 Students)
ECE 496 Senior Research Project,	2015 Fall	(Supervision of 2 Students)
ECE 397 Individual Study in ECE Problems,	2015 Summer	(Supervision of 1 Student)
ECE 597 Individual Study in ECE	2015 Summer	(Supervision of 1 Student)
ECE 340 Semiconductor Electronics,	2015 Spring	(Class of 50 Students)
ECE 397 Individual Study in ECE Problems,	2015 Spring	(Supervision of 5 Students)
ECE 597 Individual Study in ECE	2015 Spring	(Supervision of 1 Student)
ECE 340 Semiconductor Electronics,	2014 Fall	(Class of 28 Students)
ECE 397 Individual Study in ECE Problems,	2014 Fall	(Supervision of 1 Student)
ECE 597 Individual Study in ECE	2014 Fall	(Supervision of 1 Student)



SELECT OUTREACH ACTIVITIES:

- **Callan McCormick (of Colorado College, CO)** Research Experience for Undergraduates Program, May 30 – Aug 25, 2017.
- **Kelly Jolley (of Canby High School, Canby, OR)** Research Experience for Teachers Program, June 28 – August 8, 2017.
- **Larissa Del Rosario (of University of Puerto Rico, Mayaguez, Puerto Rico)** Research Experience for Undergraduates Program, May 23 – July 29, 2016.
- **Kelly Jolley (of Abilene High School, Abilene, TX)** Research Experience for Teachers Program, June 13 – July 22, 2016.
- **Geoffrey W. Freymuth (of Jefferson Middle School, Champaign, IL),** Research Experience for Teachers Program, June 15 – July 24, 2015.

SELECT GRAD STUDENT AWARDS (EXTERNAL)

- 1 [NASA Space Technology Research Fellow](#)
 - (2017) *Richard Liu*
- 1 [NSF Graduate Research Fellow](#)
 - (2017) *Richard Liu {declined}*
- 2 [CS MANTECH Travel Awardees](#)
 - (2017) *Richard Liu; Hsuan-Ping Lee*

SELECT GRAD STUDENT AWARDS (INTERNAL)

- 1 [UIUC Graduate College Conference Travel Grant](#)
 - (2017) *Hsuan-Ping Lee*

SELECT UG STUDENT AWARDS (EXTERNAL)

- 2 [NSF Graduate Research Fellows](#)
 - (2017) *Ryan Grady*; (2016) *Connor Bailey*
- 1 [NSF Graduate Research Honorable Mention](#)
 - (2017) *Josh Perozek*
- 1 [Goldwater Scholar](#)
 - (2017) *Dennis Rich*
- 2 Summer School Invitees
 - (2017) *Jose Ignacio Vergara Panzone*, invitation to the Summer Undergraduate Research Program for Diversity in Chemistry at the Department of Chemistry at Princeton University.
 - (2016) *Yifan Yao*, invitation to the Summer School "[Finding Nano - Nanoscience, Research and Industry in Germany](#)" (from June 13th - July 14th) at the Technical University of Munich..
- 1 [League of Railway Industry Women Scholar](#)
 - (2016) *Connor Bailey*

SELECT UG STUDENT AWARDS (INTERNAL)

- 1 [UIUC Office of Undergraduate Research Research Support Grant](#)
 - (2017) *Josephine Melia*
- 1 [UIUC Illinois Distinguished Fellow](#)
 - (2017) *Josh Perozek (declined)*



- **1** [UIUC ECE Distinguished Research Fellow](#)
 - (2017) Josh Perozek(declined)
- **2** [UIUC ECE A. R. "Buck" Knight Award](#)
 - (2017) Josh Perozek; Ryan Grady
- **1** [UIUC MATSCI Earl J. Eckel Scholarship](#)
 - (2017) Yifan Yao
- **1** [UIUC ECE Robert C. MacClinchie Scholarship](#)
 - (2016) Ryan Grady
- **1** [UIUC College of Engineering Scholarship](#)
 - (2016) Josh Perozek
- **2** [UIUC Office of Undergraduate Research Conference Travel Award](#)
 - (2017) Yifan Yao
 - (2016) Josh Perozek

BIBLIOGRAPHY (students supervised: **underlined**)

Patents:

45. C. Bayram, R. Grady, and K. Park, “Normally-Off, Cubic Phase GaN Field Effect Transistors” US Patent Application {filed on Sept. 8, 2017}.
44. C. Bayram and R. Liu, “Maximizing cubic phase group III-nitride on patterned silicon,” [US Patent Application 20170310076](#).
43. C. Bayram, C.P. D’Emic, J. Kim, and D.K. Sadana, “Hetero-integration of III-N material on silicon,” [US Patent Application 20170092483](#).
42. C. Bayram, S. W. Bedell, N. Li, K.T. Shiu, and D. K. Sadana “Back contact LED through spalling,” [US Patent Application 20160284930](#).
41. C. Bayram, C.P. D’Emic, W.J. Gallagher, E. Leobandung, and D.K. Sadana “Group III nitride integration with CMOS technology,” [US Patent Application 20160284832](#).
40. C. Bayram, C.P. D’Emic, W.J. Gallagher, E. Leobandung, and D.K. Sadana, “Group III nitride integration with CMOS technology,” [US Patent Application 20160233244](#).
39. C. Bayram, C.P. D’Emic, J. Kim, and D.K. Sadana, “Hetero-integration of III-N material on silicon,” [US Patent Application 20160020283](#).
38. C. Bayram, C.P. D’Emic, W.J. Gallagher, E. Leobandung, and D.K. Sadana, “Group III nitride integration with CMOS technology,” [US Patent Application 20150318283](#).
37. C. Bayram, C.P. D’Emic, W.J. Gallagher, E. Leobandung, and D.K. Sadana, “Group III nitride integration with CMOS technology,” [US Patent Application 20150318276](#).
36. C. Bayram, S. W. Bedell, and D. K. Sadana,, “Engineered base substrates for releasing III-V epitaxy through spalling,” [US Patent Application 20150318168](#).
35. C. Bayram, C.-W. Cheng, D.K. Sadana, and K.-T. Shiu, “Selective gallium nitride regrowth on (100) silicon,” [US Patent Application 20150287790](#).
34. C. Bayram, C.-W. Cheng, T.H. Ning, D.K. Sadana, and K.-T. Shiu, “Heterogeneous integration of group III nitride on silicon for advanced integrated circuits,” [US Patent Application 20150235838](#).



33. C. Bayram, S.W. Bedell, K.E. Fogel, J.A. Ott, and D.K. Sadana, “*Controlled spalling of group III nitrides containing an embedded spall releasing plane*,” [US Patent Application 20150179428](#).
32. C. Bayram, C. Dimitrakopoulos, K. Fogel, J. Kim, J.A. Ott, and D.K. Sadana, “*Gallium nitride material and device deposition on graphene terminated wafer and method of forming the same*,” [US Patent Application 20150084074](#).
31. C. Bayram, C. Dimitrakopoulos, K. Fogel, J. Kim, J.A. Ott, and D.K. Sadana, “*Gallium nitride material and device deposition on graphene terminated wafer and method of forming the same*,” [US Patent Application 20150083036](#).
30. C. Bayram, S.W. Bedell, and D.K. Sadana, “*Curvature compensated substrate and method of forming the same*,” [US Patent Application 20150035123](#).
29. C. Bayram, J. O. Chu, C. Dimitrakopoulos, J. Kim, H. Park, and D.K. Sadana, “*Thin film wafer transfer and structure for electronic devices*,” [US Patent Application 20140220764](#).
28. C. Bayram, J. O. Chu, C. Dimitrakopoulos, J. Kim, H. Park, and D.K. Sadana, “*Thin film wafer transfer and structure for electronic devices*,” [US Patent Application 20140217356](#).
27. C. Bayram, D.K. Sadana, and K.-T. Shiu, “*Group III-nitrides on nanopatterned substrates*,” [US Patent Application 20140191284](#).
26. C. Bayram, D.K. Sadana, and K.-T. Shiu, “*Group III-nitrides on nanopatterned substrates*,” [US Patent Application 20140191283](#).
25. C. Bayram, C.-W. Cheng, D.K. Sadana, and K.-T. Shiu, “*Selective gallium nitride regrowth on (100) silicon*,” [US Patent Application 20140134830](#).
24. C. Bayram, C.-W. Cheng, D.K. Sadana, and K.-T. Shiu, “*Selective gallium nitride regrowth on (100) silicon*,” [US Patent Application 20140131724](#).
23. C. Bayram, C.-W. Cheng, D.K. Sadana, and K.-T. Shiu, “*Dual phase gallium nitride material formation on (100) silicon*,” [US Patent Application 20140131722](#).
22. C. Bayram, S.W. Bedell, D. Sadana, and J.L. Saenger, “*Laser-initiated exfoliation of group III-nitride films and applications for layer transfer and patterning*,” [US Patent Application 20130280885](#).
21. C. Bayram, C.-W. Cheng, T.H. Ning, D.K. Sadana, and K.-T. Shiu, “*Heterogeneous integration of group III nitride on silicon for advanced integrated circuits*,” [US Patent Application 20130270608](#).
20. C. Bayram, S. W. Bedell, N. Li, K.T. Shiu, and D. K. Sadana, “*Back contact LED through spalling*,” [U.S. Patent 9,865,769](#), issued January 9, 2018.
19. C. Bayram, C.P. D’Emic, W.J. Gallagher, E. Leobandung, and D.K. Sadana, “*Group III nitride integration with CMOS technology*,” [U.S. Patent 9,660,069](#), issued May 23, 2017.
18. C. Bayram, C.-W. Cheng, T. Gokmen, N. Li, J.A. Ott, D.K. Sadana, and K.T. Shiu, “*Polarization free gallium nitride-based photonic devices on nanopatterned silicon*,” [U.S. Patent 9,608,160](#), issued March 28, 2017.
17. C. Bayram, C.P. D’Emic, J. Kim, and D.K. Sadana, “*Hetero-integration of III-N material on silicon*,” [U.S. Patent 9,601,583](#), issued March 21, 2017.
16. C. Bayram, C. Dimitrakopoulos, K. Fogel, J. Kim, J.A. Ott, and D.K. Sadana, “*Gallium nitride material and device deposition on graphene terminated wafer and method of forming the same*,” [U.S. Patent 9,574,287](#), issued February 21, 2017.



15. C. Bayram, C.P. D’Emic, W.J. Gallagher, E. Leobandung, and D.K. Sadana, “*Group III nitride integration with CMOS technology*,” [U.S. Patent 9,564,526](#), issued February 7, 2017.
14. C. Bayram, C.-W. Cheng, D.K. Sadana, and K.-T. Shiu, “*Selective gallium nitride regrowth on (100) silicon*,” [U.S. Patent 9,391,144](#), issued July 12, 2016.
13. C. Bayram, C.P. D’Emic, W.J. Gallagher, E. Leobandung, and D.K. Sadana, “*Group III nitride integration with CMOS technology*,” [U.S. Patent 9,362,281](#), issued June 7, 2016.
12. C. Bayram, C.P. D’Emic, W.J. Gallagher, E. Leobandung, and D.K. Sadana, “*Group III nitride integration with CMOS technology*,” [U.S. Patent 9,331,076](#), issued May 3, 2016.
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44. (INVITED) **C. Bayram**, “Vertical thinking in light emitting diodes,” Nano@Illinois RET Research Seminar, University of Illinois at Urbana-Champaign, Urbana, IL, USA, June 28 (2016).
43. (INVITED) **C. Bayram**, “GaN devices gearing up for the 21st century,” Company Seminar, Veeco Company, Somerset, NJ, USA, January 11 (2016).
42. (INVITED) **C. Bayram**, “Vertical thinking in light emitting diodes,” Nano@Illinois RET Research Seminar, University of Illinois at Urbana-Champaign, Urbana, IL, USA, July 21 (2015).
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40. (INVITED) **C. Bayram**, “Light emitting diode gearing up for the 21st century,” ECE Explorations, University of Illinois at Urbana-Champaign, Urbana, IL, USA, Feb. 25 (2015).
39. (INVITED) **C. Bayram**, J. Kim, H. Park, C.-W. Cheng, C. Dimitrakopoulos, J. A. Ott, K. B. Reuter, S. W. Bedell, and D.K. Sadana, “Vertical thinking in blue light emitting diodes: GaN-on-graphene technology,” SPIE Photonics West, San Francisco, CA, USA, February 7-12 (2015).
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35. (INVITED) **C. Bayram**, “Gallium nitride compound semiconductors for ultraviolet, visible, and terahertz photonics” 2nd International Conference and Exhibition on Lasers, Optics, and Photonics, Philadelphia, PA, USA, Sep. 08-10, 2014.
34. (INVITED) **C. Bayram**, “LED lighting” International Summer School on Advanced TV Technologies, Antalya, TURKEY, Aug. 25-29, 2014.



33. **C. Bayram**, J. Kim, H. Park, C.-W. Cheng, C. Dimitrakopoulos, J. Ott, K.B. Reuter, S.W. Bedell, and D. K. Sadana, "Revolutionary GaN-on-graphene technology," 5th International Symposium on Growth of III-Nitrides, Atlanta, GA, USA, May 18-22, 2014.
32. **C. Bayram**, J. Ott, K.-T. Shiu, C.-W. Cheng, Y. Zhu, J. Kim, M. Razeghi, and D.K. Sadana, "Cubic phase GaN on nano-grooved Si (100) via maskless selective area epitaxy," 5th International Symposium on Growth of III-Nitrides, Atlanta, GA, USA, May 18-22, 2014.
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30. (INVITED) **C. Bayram**, "Renewable energy and energy-efficiency in Turkey: Research and development trends," 2nd TUBITAK Workshop for Turkish Scientist Residing Abroad (hosted by Scientific and Technological Research Council of Turkey), Grand Cevahir Otel, Istanbul, TURKEY, July 4-5 (2013).
29. **D. Shahrjerdi**, S. W. Bedell, **C. Bayram**, and D. K. Sadana, "Flexible InGaP/(In)GaAs tandem solar cells with very high specific power," 39th IEEE Photovoltaic Specialists Conference, Tampa, Florida, USA, June 16-21 (2013).
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1. **(INVITED) K. Minder**, F. H. Teherani, D. Rogers, **C. Bayram**, R. McClintock, P. Kung, and M. Razeghi, "Etching of ZnO towards the development of ZnO homostructure LEDs," SPIE Photonics West, San Francisco, CA, USA, January 20-25 (2008).

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5. **(INVITED) C. Bayram**, "Green LEDs: The case for cubic GaN," Compound Semiconductor Magazine 22 (8), 27 (Dec. 2016).
4. **(INVITED) C. Bayram**, "Link Fellows, Where are they now," Link Foundation Newsletter, Sept. 2015.
3. **(INVITED) C. Bayram**, "Featured Engineer," EEWeb.com, 7 Sept. 2015.
2. **(INVITED) C. Bayram**, "ICORLAB Gearing Up for the 21st Century," IEEE Electron Devices Society Newsletter, 22 (2) Apr. 2015.
1. **(INVITED) C. Bayram**, "Doç. Dr. Can Bayram ile Söyleşi," TUBITAK, 22 Aug. 2014.



Workshops/Meetings:

13. *Naval Future Force Science and Technology Expo*, Washington, D.C. (July 20-21, 2017).
12. *GHz-THz Electronics Review*, Arlington, VA (July 11-13, 2017).
11. *ARPA-E SWITCHES Annual Review*, Philadelphia, PA, USA (March 28-29, 2017).
10. *ARL Open House*, Adelphi Laboratory Center, MD, USA (November 16-17, 2016).
9. *CLEO Conference*, San Jose, CA, USA (June 05-10, 2016).
8. *CS Man Tech Conference*, Miami, FL, USA (May 15-20, 2016).
7. *NSF CAREER Proposal Writing Workshop*, St. Louis, MO, USA (March 21-22, 2016).
6. *ARL Open House*, Aberdeen Proving Ground, MD, USA (November 3-4, 2015).
5. *AFOSR YIP Annual Meeting*, Arlington, VA, USA (June 15-18, 2015).
4. *NSF Spring Grants Conference*, Tampa, FL, USA (June 1-2, 2015).
3. *Illinois Partnership for Ophthalmology Engineering Workshop*, Urbana, IL, USA (May 18, 2015).
2. *NSF CAREER Proposal Writing Workshop*, Northeastern University, Boston, MA, USA (April 27-28, 2015).
1. *DOE Solid State Lighting R&D Workshop*, San Francisco, CA, USA (January 27-29, 2015).