Prof. Can Bayram

Department of Electrical and Computer Engineering,
University of Illinois at Urbana-Champaign, IL, USA

EDUCATION:

2005 - 2011 *(~ 6 years)* Ph.D. (Electrical Engineering) Northwestern University, Illinois, USA

Ph.D. focus on Solid State Devices and Photonics

2001 - 2005 *(~ 4 years)* B.S. (Electrical Engineering) Bilkent University, Ankara, TURKEY

B.S. focus on Physical Electronics

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 *(~3 years)* **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

2010 - 2011 *(~ 9 months)* **Research Fellow**, *IBM Research, Thomas J. Watson Research Center, Yorktown Heights, NY, USA*
Research Area: Novel GaN-based terahertz photonic devices

2010 - 2011 *(~ 1 year)* **Energy Fellow**, *Link Foundation Energy Programs, Thayer School of Engineering, Dartmouth College, NH, USA*
Research Area: High performance GaN-based visible light emitting diodes

2005 - 2010 *(~ 5 years)* **Research Assistant**, *Department of Electrical Engineering and Computer Science, Northwestern University, IL, USA*
Research Area: High efficiency wide bandgap (AlGaInN and MgZnO) photonic devices: Ultraviolet detectors and green light emitting diodes

2004 - 2005 *(~ 1 year)* **Research Assistant**, *Department of Electrical Engineering, Bilkent University, Ankara, TR*
Research Area: Capacitive micromachined ultrasonic transducer arrays

2003 - 2003 *(~ 3 months)* **Research Intern**, *ASELSAN, Ankara, TR*
Research Area: Communication and information technologies

2002 - 2002 *(~ 3 months)* **Visiting Researcher**, *Department of Electrical Engineering, Stanford University, CA, USA*
Research Area: Novel ultrasonic micro-electro-mechanical systems

SELECT RESEARCH HONORS, AWARDS, & RECOGNITION:

- **(2017) NSF CAREER Award** (awarded to select junior faculty 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 in the U.S. 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 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:

2017	J. Phys. D: Appl. Phys. 50, 055103 **- HIGHLIGTED 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
2016	APL 109, 042103 **- HIGHLIGTED BY 20+ NEWS AGENCIES**	○ 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**	○ 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**	○ First polarization-free visible emitters ○ First CMOS-compatible integration of GaN on Si (100) substrates (8-inch)
2013	Appl. Phys. Express 6, 112301	○ New class of vertical/thin-film LEDs enabled via mechanical release
2013	Adv. Energy Mater. 3, 566 **-INSIDE COVER ARTICLE**	○ Highest specific power (≥1995 W/kg) flexible III-V tandem solar cells
2013	APL 102, 011106	○ Highest power ultraviolet LED on Si
2012	APL 100, 053901 **-EDITOR'S PICK 2012** **-TOP 20 MOST READ**	○ Highest efficiency Ge/GaAs/InGaP- based thin film solar cell
2010	APL 97, 181109	○ First reliable GaN-based resonant tunneling diode
2009	APL 95, 131109	○ First mid-infrared GaN-based intersubband device
2009	AP A 96, 403	○ First green emitting InGaN quantum dots
2008	APL 93, 08111	○ First ZnO-InGaN hybrid light emitting diodes
2008	APL 93, 211107	○ Highest efficiency AlGaN-based ultraviolet detector
2007	APL 91, 041104	○ First AlGaN-based ultraviolet single photon detector

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

- "*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 Newsline 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 *(member since 2009)*
Senior Member	*2016-present*	IEEE Photonics Society *(member since 2007)*
Senior Member	*2016-present*	IEEE Society *(member since 2005)*
Senior Member	*2013-present*	SPIE Society *(member since 2006)*
Member	*2010-present*	Institute of Physics (IOP)
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
Singapore National Research Foundation, 2017
Advanced Research Projects Agency – Energy, *2017*
National Science Foundation (NSF), *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, *San Diego, USA, August 28-Sept. 1, 2016*
SPIE Optics + Photonics, *San Diego, USA, August 9-13, 2015*

Conference Organizing Committee
SPIE Photonics West, *San Francisco, USA, February, 2018*
International Conference on Electron Devices and Solid-State Circuits, *Taipei, October, 2017*
SPIE Optics + Photonics, *San Diego, USA, August 6-10, 2017*
CNST 14th Annual Nanotechnology Workshop, University of Illinois at Urbana-Champaign, *IL, USA, May 5-6, 2016*
SPIE NanoScience + Engineering, *San Diego, USA, August 9-13, 2015*
SPIE Photonics West, *San Francisco, USA, February 7-12, 2015*
SPIE Photonics West, *San Francisco, USA, February 1-6, 2014*

Session Chair
SPIE Photonics West, 2017, 2010
International Workshop on Nitrides, 2016

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

SERVICE TO UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN:

MNTL Search Committee 2017/04 to present
Visiting Research Scientist

MNTL Search Committee / Diversity Advocate 2016/04 to present
MOCVD Research Engineer Position

MNTL Search Committee Chair 2015/12 to 2016/10
Cleanroom Manager Position

MNTL Search Committee / Diversity Advocate 2015/04 to 2016/06
Research (Etch) Engineer Position

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, *(9 students)*
ECE Preliminary Exam Committee, *(5 students)*
ECE PhD Final Exam Committee, *(3 student)*

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 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 Students)*
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:

- **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 Illinois Distinguished Fellow
  - *(2017) Josh Perozek*
- **1** UIUC ECE Distinguished Research Fellow
  - *(2017) Josh Perozek*
- **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*

BIBLIOGRAPHY (students supervised: underlined)

Patents:

42. C. Bayram and R. Liu, "*Maximizing cubic phase group III-nitride on patterned silicon*," US Patent Application {filed on April 16, 2017}.

41. C. Bayram, C.P. D'Emic, J. Kim, and D.K. Sadana, "*Hetero-integration of III-N material on silicon*," US Patent Application 20170092483.

40. C. Bayram, S. W. Bedell, N. Li, K.T. Shiu, and D. K. Sadana "*Back contact LED through spalling*," US Patent Application 20160284930.

39. 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.

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 20160233244.

37. C. Bayram, C.P. D'Emic, J. Kim, and D.K. Sadana, "*Hetero-integration of III-N material on silicon*," US Patent Application 20160020283.

36. 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.

35. 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.
34. C. Bayram, S. W. Bedell, and D. K. Sadana,, "*Engineered base substrates for releasing III-V epitaxy through spalling,*" US Patent Application 20150318168.
33. C. Bayram, C.-W. Cheng, D.K. Sadana, and K.-T. Shiu, "*Selective gallium nitride regrowth on (100) silicon*," US Patent Application 20150287790.
32. 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.
31. 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.
30. 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.
29. 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.
28. C. Bayram, S.W. Bedell, and D.K. Sadana, "*Curvature compensated substrate and method of forming the same*," US Patent Application 20150035123.
27. 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.
26. 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.
25. C. Bayram, D.K. Sadana, and K.-T. Shiu, "*Group III-nitrides on nanopatterned substrates*," US Patent Application 20140191284.
24. C. Bayram, D.K. Sadana, and K.-T. Shiu, "*Group III-nitrides on nanopatterned substrates*," US Patent Application 20140191283.
23. C. Bayram, C.-W. Cheng, D.K. Sadana, and K.-T. Shiu, "*Selective gallium nitride regrowth on (100) silicon*," US Patent Application 20140134830.
22. C. Bayram, C.-W. Cheng, D.K. Sadana, and K.-T. Shiu, "*Selective gallium nitride regrowth on (100) silicon*," US Patent Application 20140131724.
21. 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.
20. 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.
19. 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.
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.
11. C. Bayram, S. W. Bedell, and D. K. Sadana,, "*Engineered base substrates for releasing III-V epitaxy through spalling*," U.S. Patent 9,245,747, issued January 26, 2016.
10. C. Bayram, S. W. Bedell, D. K. Sadana, and K. L. Saenger, "*Laser-initiated exfoliation of group iii-nitride films and applications for layer transfer and patterning*," U.S. Patent 9,236,271, issued January 12, 2016.
9. C. Bayram, C.-W. Cheng, D.K. Sadana, and K.-T. Shiu, "*Heterogeneous integration of group iii nitride on silicon for advanced integrated circuits*," U.S. Patent 9,236,251, issued January 12, 2016.
8. C. Bayram, C.-W. Cheng, D.K. Sadana, and K.-T. Shiu, "*Selective gallium nitride regrowth on (100) silicon*," U.S. Patent 9,099,381, issued August 4, 2015.
7. C. Bayram, C.-W. Cheng, D.K. Sadana, and K.-T. Shiu, "*Selective gallium nitride regrowth on (100) silicon*," U.S. Patent 9,059,075, issued June 16, 2015.
6. C. Bayram and D.K. Sadana, "*Light emitting diodes with via contact scheme*," U.S. Patent 9,059,339, issued June 16, 2015.
5. 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*," U.S. Patent 9,058,990, issued June 16, 2015.
4. C. Bayram, C.-W. Cheng, D.K. Sadana, and K.-T. Shiu, "*Heterogeneous integration of group iii nitride on silicon for advanced integrated circuits*," U.S. Patent 9,053,930, issued June 9, 2015.
3. C. Bayram, C.-W. Cheng, T. H. Ning, D.K. Sadana, and K.-T. Shiu, "*Dual phase gallium nitride material formation on (100) silicon*," U.S. Patent 9,048,173, issued June 2, 2015.
2. C. Bayram, D.K. Sadana, and K.-T. Shiu, "*Group III nitrides on nanopatterned substrates*," U.S. Patent 8,927,398, issued January 6, 2015.
1. C. Bayram, J. O. Chu, C. Dimitrakopoulos, J. Kim, H. Park, and D.K. Sadana, "*Thin film wafer transfer and structure for electronic devices*," U.S. Patent 8,916,451, issued December 23, 2014.

Books:

1. **C. Bayram.** *III-nitride Optoelectronic Devices: AlGaInN Gap Engineering from Ultraviolet and Visible Wavelengths towards Terahertz Regime;* ProQuest, UMI Dissertation Publishing, 2012; ISBN-10: 1249058430; ISBN-13: 978-1249058434.

Book Chapters:

2. **C. Bayram** and R. Liu, *Exploring the Next Phase in Gallium Nitride Photonics: Cubic phase light emitters hetero-integrated on silicon*. In Volume 96. Nitride Semiconductors, Z. Mi. and C. Jagadish, Eds., Academic Press (Elsevier), San Diego, CA, pp. 411-435 (2017); Print ISBN: 9780128095843; Electronic ISBN: 9780128097236.
1. **C. Bayram**, D. K. Sadana, and M. Razeghi, AlGaN-based Intersubband Device Technology. In *The Wonder of Nanotechnology: Quantum Optoelectronic Devices and Applications*, M. Razeghi. L. Esaki, and K. von Klitzing, Eds., SPIE Press, Bellingham, WA, pp. 175-206 (2013); ISBN: 9780819495969.

Editorship:

1. *Carbon Nanotubes, Graphene, and Emerging 2D Materials for Electronic and Photonic Devices VIII*, M. Razeghi, M. Ghazinejad, C. Bayram, J. S. Yu, Y. H. Lee, Eds., SPIE Press, Bellingham, WA, 2015; ISBN-10: 1628417188; ISBN-13: 978-1628417180.

Publications

Journal Articles (listed in the International Science Index database):

[May 2017] [h-index ≥ 20 ; citations ≥ 1200]

40. K.-T. Lee, **C. Bayram**, D. Piedra, E. Sprogis, H. Deligianni, B. Krishnan, G. Papasouliotis, A. Paranjpe, E. Aklimi, K. Shepard, W. J. Gallagher, T. Palacios, and D. K. Sadana, "*Heterogeneous Integration of GaN Devices on a 200 mm Si(100) Wafer via Scalable CMOS Technology*," IEEE Electron Device Lett. (IN-PRESS).
39. K. Park, M. A. Stroscio, and **C. Bayram**, "*Investigation of electron mobility and saturation velocity limits in gallium nitride using uniaxial dielectric continuum model*," J. Appl. Phys. 122 (IN-PRESS) (07-JUL-17).
38. R. Grady and **C. Bayram**, "*Simulation of zincblende AlGaN/GaN high electron mobility transistors for normally-off operation*," J. Phys. D-Appl. Phys. 50, 265104 (2017).
37. J. Perozek, H.-P. Lee, B. Krishnan, G. Papasouliotis, A. Paranjpe, K. B. Reuter, D. K. Sadana, and **C. Bayram**, "*Investigation of Structural, Optical, and Electrical Characteristics of an AlGaN/GaN High Electron Mobility Transistor Structure across a 200 mm Si (111) Substrate*," J. Phys. D-Appl. Phys. 50, 055103 (2017).
36. H-P Lee, J. Perozek, L. N. D. Rosario, and **C. Bayram**, "*Investigation of AlGaN/GaN high electron mobility transistor structures on 200-mm silicon (111) substrates employing different buffer layer configurations*," Sci. Rep. 6:37588 (2016).
35. K. Park and **C. Bayram**, "*Thermal Resistance Optimization of GaN / Substrate Stacks Considering Thermal Boundary Resistance and Temperature-dependent Thermal Conductivity*," Appl. Phys. Lett. 109, 151904 (2016).
34. R. Liu and **C. Bayram**, "*Maximizing Cubic Phase Gallium Nitride Surface Coverage on Nano-patterned Silicon (100)*," Appl. Phys. Lett. 109, 042103 (2016).

33. R. Liu and **C. Bayram**, "*Cathodoluminescence study of luminescence centers in hexagonal and cubic phase GaN hetero-integrated on Si(100),*" J. Appl. Phys. 120, 025106 (2016).

32. J. Kim† & **C. Bayram†** († equal contribution), H. Park, C.-W. Cheng, C. Dimitrakopoulos, J. A. Ott, K. B. Reuter, S. W. Bedell, and D.K. Sadana, "*Principle of direct van der Waals epitaxy of single-crystalline films on epitaxial graphene,*" Nat. Commun. 5:4836 (2014).

31. **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,*" Adv. Funct. Mater. 24 (28), 4492 (2014). (FRONTISPECE COVER ARTICLE)

30. S. W. Bedell, **C. Bayram**, K. Fogel, P. Lauro, J. Kiser, J. Ott, Y. Zhu, and D. Sadana, "*Vertical light-emitting diode fabrication by controlled spalling,*" Applied Physics Express 6 (11), 112301 (2013).

29. D. Shahrjerdi, S. W. Bedell, **C. Bayram**, C. C. Lubguban, K. Fogel, P. Lauro, J. A. Ott, M. Hopstaken, M. Gayeness, and D. Sadana, "*Ultra-light high-efficiency flexible InGaP/(In)GaAs tandem solar cells on plastic,*" Advanced Energy Materials 3 (5), 566–571 (2013). (INSIDE COVER ARTICLE)

28. Y. Zhang, S. Gautier, C.-Y. Cho, E. Cicek, Z. Vashaei, R. McClintock, **C.Bayram**, Y. Bai, and M. Razeghi, "*Near miliwatt power AlGaN-based ultraviolet light emitting diodes based on lateral epitaxial overgrowth of AlN on Si(111),*" Applied Physics Letters 102, 011106 (2013).

27. D. Shahrjerdi, S. W. Bedell, C. Ebert, **C. Bayram**, B. Hekmatshoar, K. Fogel, P. Lauro, M. Gaynes, T. Gokmen, J. Ott, and D. K. Sadana, "*High-efficiency thin- film InGaP/InGaAs/Ge tandem solar cells enabled by controlled spalling technology,*" Applied Physics Letters 100, 053901 (2012). (TOP 20 Most Downloaded Articles) (EDITOR'S PICK 2012)

26. **C. Bayram**, "*High quality AlGaN/GaN superlattices for near- and mid-infrared intersubband transitions,*" Journal of Applied Physics 111, 013514 (2012).

25. **C. Bayram**, Z. Vashaei, and M. Razeghi, "*Reliability in room-temperature negative differential resistance characteristics of low-aluminium-content AlGaN/GaN double-barrier resonant tunneling diodes,*" Applied Physics Letters 97, 181109 (2010).

24. Z. Vashaei, **C. Bayram**, P. Lavenus, and M. Razeghi. "*Photoluminescence characteristics of polar and nonpolar AlGaN/GaN superlattices,*" Applied Physics Letters 97, 121918 (2010).

23. **C. Bayram**, Z. Vashaei, and M. Razeghi, "*Room temperature negative differential resistance characteristics of polar III-nitride resonant tunneling diodes,*" Applied Physics Letters 97, 092104 (2010).

22. E. Cicek, Z. Vashaei, R. McClintock, **C. Bayram**, and M. Razeghi, "*Geiger-mode operation of ultraviolet avalanche photodiodes grown on sapphire and free-standing GaN substrates,*" Applied Physics Letters 96, 261107 (2010).

21. Z. Vashaei, E. Cicek, **C. Bayram**, R. McClintock, and M. Razeghi, "*GaN avalanche photodiodes grown on m-plane freestanding GaN substrate,*" Applied Physics Letters 96, 201908 (2010).

20. Z. Vashaei, **C. Bayram**, and M. Razeghi, "*Demonstration of negative differential resistance in GaN/AlN resonant tunneling diodes at room temperature*," Journal of Applied Physics 107, 083505 (2010).
19. **C. Bayram**, Z. Vashaei, and M. Razeghi, "*AlN/GaN double-barrier resonant tunneling diodes grown by metal-organic chemical vapor deposition*," Applied Physics Letters 96, 042103 (2010).
18. **C. Bayram,** N. Péré-Laperne, and M. Razeghi, "*Effects of well width and growth temperature on optical and structural characteristics of AlN/GaN superlattices grown by metal-organic chemical vapor deposition*," Applied Physics Letters 95, 201906 (2009).
17. N. Péré-Laperne, **C. Bayram**, L. Nguyen-Thê, R. McClintock, and M. Razeghi, "*Tunability of Intersubband absorption from 4.5 to 5.3 μm in a GaN/$Al_{0.2}Ga_{0.8}N$ superlattices grown by metalorganic chemical vapor deposition*," Applied Physics Letters 95, 131109 (2009).
16. **C. Bayram** and M. Razeghi, "*ULTRAVIOLET DETECTORS: Nitrides push performance of UV photodiodes*," Laser Focus World 45(9), p. 47-51 (2009).
15. **C. Bayram**, D. Rogers, F. H. Teherani, and M. Razeghi, "*Fabrication and characterization of novel hybrid green LEDs based on substituting n-type ZnO for n-type GaN in an inverted p-n junction*," Journal of Vacuum Science and Technology B 27, 1784 (2009).
14. V. E. Sandana, D. J. Rogers, F. H. Teherani, R. McClintock, **C.Bayram**, M. Razeghi, H.-J. Drouhin, M.C. Clochard, V. Sallet, G. Garry, and F. Falyouni, "*Comparison of ZnO nanostructures grown using pulsed layer deposition, metalorganic chemical vapor deposition, and physical vapor transport*", Journal of Vacuum Science and Technology B 27, 1678 (2009).
13. **C. Bayram**, N. Péré-laperne, R. McClintock, B. Fain and M. Razeghi, "*Pulsed metalorganic chemical vapor deposition of high quality AlN/GaN superlattices for near-infrared intersubband transitions*," Applied Physics Letters 94, 121902 (2009).
12. **C. Bayram** and M. Razeghi, "*Stranski-Krastanov growth of InGaN quantum dots emitting in green spectra*," Applied Physics A: Materials Science & Processing 96, 403 (2009).
11. **C. Bayram**, J. L. Pau, R. McClintock, and M. Razeghi, "*Comprehensive study of blue and green multi-quantum-well light emitting diodes grown on conventional and lateral epitaxial overgrowth GaN*," Applied Physics B: Lasers and Optics 95, 307 (2009).
10. J. L. Pau, **C. Bayram**, P. Giedraitis, R. McClintock, and M. Razeghi, "*GaN nanostructured p-i-n photodiodes*," Applied Physics Letters 93, 221104 (2008).
9. **C. Bayram**, J. L. Pau, R. McClintock, M. Razeghi, M. P. Ulmer, and D. Silversmith, "*High quantum efficiency back-illuminated GaN avalanche photodiodes*," Applied Physics Letters 93, 211107 (2008).
8. **C. Bayram**, F. H. Teherani, D. Rogers, and M. Razeghi, "*A hybrid green light-emitting diode comprised of n-ZnO/(InGaN/GaN) multi-quantum wells/p-GaN*," Applied Physics Letters 93, 081111 (2008).
7. **C. Bayram**, J. L. Pau, R. McClintock, and M. Razeghi, "*Performance enhancement of GaN ultraviolet avalanche photodiodes with p-type delta- doping*," Applied Physics Letters 92, 241103 (2008).

6. **C. Bayram**, J. L. Pau, R. McClintock, and M. Razeghi, "*Delta-doping optimization for high quality p-type GaN*," Journal of Applied Physics 104, 083512 (2008).
5. J. L. Pau, **C. Bayram**, R. McClintock, D. Silversmith, and M. Razeghi, "*Back-illuminated separate absorption and multiplication GaN avalanche photodiodes*" Applied Physics Letters 92, 101120 (2008).
4. J. L. Pau, R. McClintock, **C. Bayram**, K. Minder, D. Silversmith, and M. Razeghi, "*High optical response in forward biased (In,Ga)N-GaN multi-quantum-well diodes under barrier illumination,*" IEEE Journal of Quantum Electronics 44, 346 (2008).
3. K. Minder, J. L. Pau, R. McClintock, P. Kung, **C. Bayram**, M. Razeghi, and D. Silversmith, "*Scaling in GaN avalanche photodiodes designed for back-illumination,*" Applied Physics Letters 91, 073513 (2007).
2. J. L. Pau, R. McClintock, K. Minder, **C. Bayram**, P. Kung, M. Razeghi, E. Munoz, and D. Silversmith, "*Gieger-mode operation of back-illuminated GaN avalanche photodiodes,*" Applied Physics Letters 91, 041104 (2007).
1. R. McClintock, J. L. Pau, K. Minder, **C. Bayram**, P. Kung, and M. Razeghi, "*Hole-initiated multiplication in back-illuminated GaN avalanche photodiodes,*" Applied Physics Letters 90, 141112 (2007).

Conference Papers (listed in the International Science Index database):

27. **C. Bayram**, "*InGaN-based flexible light emitting diodes,"* Proc. SPIE 10104, 101041Y (2017).
26. **C. Bayram** and R. Liu, "*Polarization-free integrated gallium-nitride photonics,"* Proc. SPIE 10111, 101110Y (2017).
25. **C. Bayram**† & J. Kim† († equal contribution), 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*," Proc. SPIE 9364, 93641C (2015).
24. **C. Bayram**, J. Ott, K. T. Shiu, C. W. Cheng, Y. Zhu, J. Kim, D. K. Sadana, and M. Razeghi, "*Polarization-free GaN emitters in the ultraviolet and visible spectra via heterointegration on CMOS-compatible Si (100),"* Proc. SPIE 9370, 93702F (2015).
23. S. W. Bedell, D. Shahrjerdi, K. Fogel, P. Lauro, **C. Bayram**, B. Hekmatshoar, N. Li, J. Ott, and D. Sadana, "*Advanced flexible electronics: challenges and opportunities*," Proc. SPIE 9083, 90831G (2014).
22. 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 Proceedings (2013).
21. **C. Bayram**, K.T. Shiu, Y. Zhu, C.W. Cheng, D.K. Sadana, F.H. Teherani, D.J. Rogers, V. E. Sandana, P. Bove, Y. Zhang, S. Gautier, C.-Y. Cho, E. Cicek, Z. Vashaei, R. McClintock, and M. Razeghi, "*Engineering future light emitting diodes and photovoltaics with inexpensive materials: Integrating ZnO and Si into GaN-based devices*," Proc. SPIE 8626, 86260L (2013).
20. **C. Bayram**, K.T. Shiu, Y. Zhu, C.W. Cheng, D.K. Sadana, Z. Vashaei, E. Cicek, R. McClintock, and M. Razeghi, "*Gallium nitride on silicon for cheap, scalable, and sustainable photonics*," Proc. SPIE 8631, 863112 (2013).

19. D. Shahrjerdi, S. W. Bedell, B. Hekmatshoar, **C. Bayram**, and D. Sadana, "*New paradigms for cost-effective III-V photovoltaic technology*," ECS Transactions, 50 (40) 15-22 (2013).
18. D. Shahrjerdi, S. W. Bedell, C. Ebert, **C. Bayram**, B. Hekmatshoar, K. Fogel, P. Lauro, M. Gaynes, T. Gokmen, J. A. Ott, and D. K. Sadana, "*High-efficiency thin-film InGaP/InGaAs/Ge tandem solar cells enabled By controlled spalling technology*", 38th IEEE Photovoltaic Specialists Conference Proceedings (2012).
17. **C. Bayram**, D. K. Sadana, Z. Vashaei, and M. Razeghi, "*Reliable GaN-based resonant tunneling diodes with reproducible room-temperature negative differential resistance*", Proc. SPIE 8268, 826827 (2012).
16. Z. Vashaei, **C. Bayram**, R. McClintock, and M. Razeghi, "*Effects of substrate quality and orientation on the characteristics of III-nitride resonant tunneling diodes*", Proc. SPIE 7945, 79451A (2011).
15. M. Razeghi, **C. Bayram**, Z. Vashaei, E. Cicek, and R. McClintock, "*III-Nitride Optoelectronic Devices: From ultraviolet detectors and visible emitters towards terahertz intersubband devices*", 23rd Annual Meeting of the IEEE Photonics-Society Denver, CO, Nov. 07-11 (2010).
14 R. McClintock, E. Cicek, Z. Vashaei, **C. Bayram**, M. Razeghi, and Melville P. Ulmer, "*III-nitride based avalanche photo detectors*", Proc. SPIE 7780, 77801B (2010).
13. E. Cicek, Z. Vashaei, **C. Bayram**, R. McClintock, and M. Razeghi, "*Comparison of ultraviolet APDs grown on free-standing GaN and sapphire substrates*", Proc. SPIE 7780, 77801P (2010).
12. M. Razeghi, **C. Bayram**, R. McClintock, F.H. Teherani, D.J. Rogers, and V.E. Sandana, "*Novel green light emitting diodes: Exploring droop-free lighting solutions for a sustainable earth*", Journal of Light Emitting Diodes 2 (1) 1-33 (2010).
11. M. Razeghi and **C. Bayram**, "*Material and design engineering of (Al)GaN for high-performance avalanche photodiodes and intersubband applications*," Proc. SPIE 7366, 73661F (2009).
10. **C. Bayram**, B. Fain, N. Péré-Laperne, R. McClintock, and M. Razeghi, "*Pulsed metalorganic chemical vapor deposition of high quality AlN/GaN superlattices for intersubband transitions*," Proc. SPIE 7222, 722212 (2009).
9. R. McClintock, J. L. Pau Vizcaino, **C. Bayram**, B. Fain, P. Giedraitis, M. Razeghi, and M. P. Ulmer,"*III-nitride avalanche photodiodes*," Proc. SPIE 7222, 72220U (2009).
8. **C. Bayram**, D. J. Rogers, F. Hosseini Teherani, and M. Razeghi, "*Hybrid green LED based on nZnO/MQWInGaN/pGaN*," Proc. SPIE 7217, 72170P (2009).
7. J.L. Pau, **C. Bayram**, P. Giedraitis, R. McClintock, and M. Razeghi, "*GaN-based nanostructured photodetectors*," Proc. SPIE 7222, 722214 (2009).
6. R. McClintock, J. L. P. Vizcaino, K. Minder, **C. Bayram** and M. Razeghi, "*III-nitride photon counting avalanche photodiodes*," Proc. SPIE 6900, 69000N (2008).
5. 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*," Proc. SPIE 6474, 64740Q (2007).

4. P. Kung, R. McClintock, J. L. P. Vizcaino, K. Minder, **C. Bayram**, and M. Razeghi, "*III-nitride avalanche photodiodes*," Proc. SPIE 6479, 64791J (2007).
3. R. McCLintock, K. Minder, A. Yasan, **C. Bayram**, F. Fuchs, P. Kung, and M. Razeghi, "*Solar-blind avalanche photodiodes*," Proc. SPIE 6127, 61271D (2006).
2. **C. Bayram**, S. Olcum, M. N. Senlik, and A. Atalar, "*Bandwidth improvement in a cMUT array with mixed sized elements*," Proc. IEEE Ultrason. Symp., pp. 1956-1959. (2005).
1. S. Olcum, M. N. Senlik, **C. Bayram** and A. Atalar, "*Design charts to maximize the gain-bandwidth product of capacitive micromachined ultrasonic transducers*," Proc. IEEE Ultrason. Symp. Pp. 1941-1944. (2005).

Talks & Presentations:

49. **(INVITED) C. Bayram** "*InGaN-based flexible light emitting diodes,"* SPIE Photonics West, San Francisco, CA, USA, Jan. 28 - Feb.2 (2017).
48. **(INVITED) C. Bayram** and R. Liu, "*Polarization-free integrated gallium-nitride photonics,"* SPIE Photonics West, San Francisco, CA, USA, Jan. 28 - Feb.2 (2017).
47. **C. Bayram**, J. Kim, C. Dimitrakopoulos, and D. K. Sadana, "*A Novel Thin-Film Blue Light Emitting Diode via GaN-on-Graphene Technology*," MRS Fall Meeting, Boston, MA, USA, Nov. 27-Dec. 2, (2016).
46. **C. Bayram** and R. Liu, "*Polarization-Free Integrated Gallium Nitride Photonics*," International Workshop on Nitride Semiconductors, Orlando, FL, USA, Oct. 2-7, (2016).
45. **(INVITED) C. Bayram**, "*GaN Devices Gearing up for the 21st Century,"* NANOTAM Seminar, Bilkent University, Ankara, Turkey, July 27 (2016).
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).
41. **(INVITED) C. Bayram**, "*Vertical thinking in light emitting diodes,"* CNST 13th Annual Nanotechnology Workshop, University of Illinois at Urbana-Champaign, Urbana, IL, USA, May 7-8 (2015).
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).
38. **(INVITED) C. Bayram**, J. Ott, K. T. Shiu, C. W. Cheng, Y. Zhu, J. Kim, D. K. Sadana, and M. Razeghi, "*Polarization-free GaN emitters in the ultraviolet and visible spectra via heterointegration on CMOS-compatible Si (100),"* SPIE Photonics West, San Francisco, CA, USA, February 7-12 (2015).

37. **(INVITED) C. Bayram**, "*Vertical thinking in light emitting diodes*" ECE Colloquium, University of Illinois at Urbana-Champaign, Urbana, IL, USA, Nov. 13, 2014.
36. **C. Bayram**, J. Kim, H. Park, C.-W. Cheng, C. Dimitrakopoulos, J. Ott, K.B. Reuter, S.W. Bedell, and D. K. Sadana, "*Thin-film blue light emitting diodes via revolutionary GaN-on-graphene technology,*" International Symposium on Graphene Devices (ISGD-4), Bellevue, WA, USA, Sep. 21-25, 2014.
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.
31. **(INVITED)** D. K. Sadana, N. Li, **C. Bayram**, K.-T. Shiu, and C.-W. Cheng, "*Technologies for high speed III-V optical links on silicon optoelectronics*," International Conference and Exhibition on Lasers, Optics & Photonics, Hilton San Antonio Airport, TX, USA, Oct. 07-09 (2013).
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).
28. **(INVITED) C. Bayram**, "*Gallium nitride compound semiconductors for ultraviolet, visible, and terahertz photonics*," Special Materials Science & Engineering Seminar, Columbia University, Morningside Campus, NY, USA, June 12 (2013).
27. **(INVITED) C. Bayram**, K.T. Shiu, Y. Zhu, C.W. Cheng, D.K. Sadana, F.H. Teherani, D.J. Rogers, V. E. Sandana, P. Bove, Y. Zhang, S. Gautier, C.-Y. Cho, E. Cicek, Z. Vashaei, R. McClintock, and M. Razeghi, "*Engineering light-emitting diodes with inexpensive materials: Integrating ZnO and Si into solid state lighting*," SPIE Photonics West, San Francisco, CA, USA, February 2-7 (2013).
26. **(INVITED) C. Bayram**, K.T. Shiu, Y. Zhu, C.W. Cheng, D.K. Sadana, Z. Vashaei, E. Cicek, R. McClintock, and M. Razeghi, "*Gallium nitride on silicon for cheap, scalable, and sustainable photonics*," SPIE Photonics West, San Francisco, CA, USA, February 2-7 (2013).
25. **(INVITED)** D. K. Sadana, S.W. Bedell, D. Shahrjerdi, B. Hekmatshoar, N. Li, **C. Bayram**, and J. Kim, "*Advanced PV technologies: Challenges & Opportunities*," SPIE Photonics West, San Francisco, CA, USA, February 2-7 (2013).

24. **(INVITED)** D. Shahrjerdi, S. W. Bedell, B. Hekmatshoar, **C. Bayram**, and D. Sadana, "*New paradigms for cost- effective III-V photovoltaic technology*," Pacific Rim Meeting on Electrochemical and Solid-State Science, Honolulu, Hawaii, USA, October 7-12 (2012).
23. **C. Bayram**, Z. Vashaei, R. McClintock, D.K. Sadana, and M. Razeghi, "*$Al_XGa_{1-X}N$-based engineered intersubband devices,*" Infrared Optoelectronics: Materials & Devices (MIOMD-XI) Conference, Chicago, IL, USA, September 4-8 (2012).
22. D. Shahrjerdi, S. W. Bedell, C. Ebert, **C. Bayram**, B. Hekmatshoar, K. Fogel, P. Lauro, M. Gaynes, T. Gokmen, J. A. Ott, and D. K. Sadana, "*High-efficiency thin-film InGaP/InGaAs/Ge tandem solar cells enabled by controlled spalling technology*", 38th *IEEE* Photovoltaic Specialists Conference, Austin, Texas, USA, June 3-8 (2012).
21. **(INVITED) C. Bayram,** "*Applied photonics for a sustainable earth: High efficiency light emitting diodes and solar cells*," TASSA Annual Conference, University of Maryland, College Park, MD, USA, March 3-4 (2012).
20. **(INVITED) C. Bayram**, D. K. Sadana, Z. Vashaei, and M. Razeghi, "*Reliable GaN-based resonant tunneling diodes with reproducible room-temperature negative differential resistance*," SPIE Photonics West, San Francisco, CA, USA, January 22-27 (2012).
19. **(INVITED) C. Bayram** and M. Razeghi, "*AlGaInN gap engineering from ultraviolet and visible wavelengths towards terahertz regime,*" ICDD Spring Meetings, Pennsylvania, USA, March 17 (2011).
18. **(INVITED) C. Bayram** and M. Razeghi, "*III-Nitride optoelectronic devices,*" ICDD Spring Meetings, Pennsylvania, USA, March 15 (2011).
17. Z. Vashaei, **C. Bayram**, R. McClintock, and M. Razeghi, "*Effects of substrate quality and orientation on the characteristics of III-nitride resonant tunneling diodes*", SPIE Photonics West, San Francisco, CA, USA, January 22-27 (2011).
16. E. Cicek, Z. Vashaei, **C. Bayram**, R. McClintock, and M. Razeghi, "*Comparison of ultraviolet APDs grown on free-standing GaN and sapphire substrates*", SPIE Optics + Photonics, San Diego, California, USA, August 1-5 (2010).
15. **(INVITED)** R. McClintock, E. Cicek, Z. Vashaei, **C. Bayram**, M. Razeghi, and Melville P. Ulmer, "*III-nitride based avalanche photodetectors,*" SPIE Optics + Photonics, San Diego, USA, August 1-5 (2010).
14. M. Razeghi, **C. Bayram**, and Z. Vashaei,"*III-Nitride intersubband absorption devices and resonant tunneling diodes*," 3rd International Symposium on Growth of III-Nitrides (ISGN-3) Corum - Montpellier, France, July 4-8 (2010).
13. M. Razeghi, Z. Vashaei, and **C. Bayram**,"*High quality metal-organic chemical vapor deposition of (Al)GaN-based resonant tunneling diodes*," 3rd International Symposium on Growth of III-Nitrides (ISGN-3) Corum - Montpellier, France, July 4-8 (2010).
12. **(INVITED)** M. Razeghi, **C. Bayram**, R. McClintock, F.H. Teherani, D.J. Rogers, and V.E. Sandana, "*Novel green light emitting diodes: Exploring droop-free lighting solutions for a sustainable Earth*", LED 2010: The 4th International Conference on LED and Solid State Lighting, COEX (Seoul), Korea, Feb. 3-5 (2010).

11. **(INVITED) C. Bayram**, F. H. Teherani, D. Rogers, and M. Razeghi, "*Novel green light emitting diodes*", Dow Chemical Company Sustainability Innovation Student Challenge Recognition Event, University of Michigan Ann Arbor, Oct. 19 (2009).
10. **(INVITED)** F. H. Teherani, **C. Bayram**, D. J. Rogers, M. Razeghi, and R. Mcclintock, "*Hybrid Green LEDs with n-type ZnO Substituted for n-type GaN in an Inverted p-n Junction*",2009 Annual Meeting of IEEE Photonics Society, Antalya - Belek,Turkey, Oct. 4-8 (2009).
9. **(INVITED) C. Bayram** and M. Razeghi, "*III-nitride optoelectronic devices*", 2009 Annual Meeting of IEEE Photonics Society, Antalya - Belek,Turkey, Oct. 4-8 (2009).
8. **(INVITED) C. Bayram**, F. H. Teherani, D. Rogers, R.Mcclintock, and M. Razeghi, "*Novel green light emitting diodes: Innovating droop-free lighting solutions for sustainable Earth*", 2009 symposium of the Chicago AIChE (American Institute of Chemical Engineers), Chicago, IL, Oct. 4-5 (2009).
7. **(INVITED)** M. Razeghi, **C. Bayram**, R. McClintock and N. Péré-Laperne, "*III-nitride optoelectronic devices: High performance GaN avalanche photodiodes, novel green light emitting diodes and III-nitride intersubband devices*", AFOSR Joint Electronics Program Review, Arlington, VA, May 27 (2009).
6. **C. Bayram**, D. J. Rogers, F. Hosseini Teherani, and M. Razeghi, "*Novel hybrid green LEDs based on substituting n-type ZnO for n-type GaN in an inverted p-n junction*," Proc. of the 5th International Workshop on ZnO and Related Materials, Sept. 22-24, Michigan (2008).
5. V. E. Sandana, D. J. Rogers, F. H. Teherani, R. McClintock, **C. Bayram** M. Razeghi, H.-J. Drouhin, V. Sallet, G. Garry, F. Falyouni,, "*Comparison of ZnO nanostructures grown using PLD, MOCVD & PVT*," Proc. of the 5th Int. Workshop on ZnO and Related Materials, Sept. 22-24, Michigan (2008).
4. **(INVITED)** M. Razeghi, J. L. Pau, **C. Bayram**, B. Fain, P. Giedraitis, and R. McClintock," *UV single photon detection based on III-nitride Geiger mode avalanche photodiodes*," 2nd International Symposium on Growth of III-Nitrides (ISGN-2). Laforet Shuzenji Izu, Japan, July 6 (2008).
3. **(INVITED)** M. Razeghi, J. L. Pau, **C. Bayram**, R. McClintock, K. Kim, P. Giedraitis, and B. Fain, "*GaN Avalanche Photodiodes and Green Emitters*," AFRL-AFOSR Nanotechnology Initiative Review, Dayton, OH, USA, May 6 (2008).
2. **(INVITED)** R. McClintock, J. L. P. Vizcaino, K. Minder, **C. Bayram** and M. Razeghi, "*III-nitride photon counting avalanche photodiodes*," SPIE Photonics West, San Francisco, CA, USA, January 20-25 (2008).
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).

Magazine Articles & Interviews:

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).