ERIC POP
Pease-Ye Professor of Electrical Eng. and (by courtesy) of Applied Physics and Materials Science & Eng.
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Education

Stanford University	Electrical Engineering	Ph.D., 2005
Massachusetts Institute of Technology	Electrical Engineering	M.Eng., 1999
Massachusetts Institute of Technology	Electrical Engineering	B.S., 1999
Massachusetts Institute of Technology	Physics	B.S., 1999

Appointments

Stanford University

- Pease-Ye Professor of Electrical Engineering 2023 – present
- Senior Fellow, Precourt Institute for Energy 2024 – present
- Professor of Applied Physics (by courtesy) 2024 – present
- Professor of Materials Science & Engineering (by courtesy) 2019 – present
- Professor of Electrical Engineering 2019 – present
- Affiliate, Precourt Institute for Energy 2013 – 2024
- Chambers Faculty Scholar in the School of Engineering 2016 – 2020
- Associate Professor of Materials Science & Engineering (by courtesy) 2016 – 2019
- Associate Professor of Electrical Engineering 2013 – 2019

University of Illinois at Urbana-Champaign (UIUC)

- Adjunct Professor, Electrical and Computer Engineering 2013 – 2015
- Associate Professor, Electrical and Computer Engineering (tenured) 2012 – 2013
- Affiliate and Part-Time Faculty, Beckman Institute 2008 – 2013
- Assistant Professor, Electrical and Computer Engineering 2007 – 2012

Intel Corp., Senior Engineer and visiting researcher at Stanford Univ. 2005 – 2007
Stanford University, Post-Doctoral Researcher, Chemistry & Thermal Sciences 2005
Stanford University, KZSU 90.1 FM radio DJ and General Manager 2000 – 2004

Selected Honors

2023	Pease-Ye Professor in the Stanford School of Engineering
2023	Viskanta Fellowship from Purdue University
2022	APS Fellow
2021	Intel Outstanding Researcher Award
2021	IEEE Fellow
2018	Highly Cited Researcher, Clarivate Analytics (Web of Science)
2017,13-09	Golden Reviewers List, IEEE Electron Device Letters
2016	Most Cited Researchers List in Electrical Engineering by Elsevier
2016-20	Chambers Faculty Scholar, Stanford
2015,11	Golden Reviewers List, IEEE Transactions on Electron Devices
2014	Okawa Foundation Award
2013	Terman Faculty Fellow, Stanford
2013,11,10	Engineering Council Award for Excellence in Advising, UIUC
2012	Campus Distinguished Promotion Award, UIUC
2011	Outstanding Presentation Award, E\PCOS Symposium
2011	Xerox Award for Faculty Research, UIUC
2011	IEEE Senior Member
2011	Center for Advanced Study (CAS) Fellowship, UIUC

2010 PECASE (Presidential) Award from the White House, highest honor given by the US government to early-career scientists and engineers, nominated by ARO and DOD
2010 ONR Young Investigator Program (YIP) Award
2010 NSF CAREER Award
2010 AFOSR Young Investigator Program (YIP) Award
2009 List of Teachers Ranked as Excellent, UIUC
2008 DARPA Young Faculty Award (YFA)
2007 Arnold O. Beckman Research Award, UIUC
2005 Finalist, Stanford E-Challenge Business Plan Competition (top 4 of 80 teams)
2003,02 Best Paper in Session Award, SRC TechCon
2001-04 SRC-IBM Graduate Fellowship
1999 Gerald Pearson Fellowship

Selected Honors with Supervised Students

2024 Best Student Presentation Award, MRS Spring Meeting (R.K.A. Bennett)
2023 Best Student Presentation Award, AVS (A.I. Khan)
2023 AVS Russell & Sigurd Varian Award (A.I. Khan)
2023 Best Student Presenter Award, SRC TechCon (A.I. Khan)
2022 MRS Gold Graduate Student Award, MRS Fall Meeting (A.I. Khan)
2022 Best Presentation Award, MRS Fall Meeting (A.I. Khan)
2022 Best Presentation Award, SRC TechCon (M. Chen)
2022 Best Presentation Award, SRC TechCon (C. Bailey)
2022 Best Student Paper Award, VLSI Symposium 2022 (A.I. Khan)
2020 Best Paper Award, MRS Fall 2020 (I. Datye)
2018 2018 OMEx Emerging Researcher Best Paper Prize (S. Deshmukh)
2018 Best Presentation Award, SRC TechCon (C. McClellan)
2018 Best Poster Award, IEEE Device Research Conference (S. Bohaichuk)
2018 Best Presentation Award, MRS Spring Meeting (M. Chen)
2017 Best Paper in Session Award, SRC TechCon (C. McClellan)
2017 Best Paper Award, EDISON'20 (K. Smithe)
2017 Best Conference Paper Award, IEEE NANO (A. Gabourie and S. Suryavanshi)
2016 Best Paper in Session Award, SRC TechCon (N. Wang)
2016 Best Poster Award, IEEE Device Research Conference (I. Datye and A. Gabourie)
2014 Best Paper in Session Award, SRC TechCon (C. English)
2013 Best Paper in Session Award, SRC TechCon (E. Carrion)
2011 Best Paper in Session Award, SRC TechCon (F. Xiong)

Professional Memberships

- APS Fellow, 2022 – present (Member 2011 – 2022)
- IEEE Fellow, 2021 – present (Senior Member, 2011–2021; Member 1999 – 2010)
- AVS Member, 2013 – present
- AAAS Member, 2012 – present
- MRS Member, 2007 – present
- HKN Member; Faculty Advisor for Illinois Alpha Chapter, 2009 – 2011

Conferences Chaired or Organized

- Stanford Pre-IEDM Workshop co-organizer (with Philip Wong), 2023
- IEEE NVMTS (Nonvolatile Memory Technology Symposium) conference chair, 2022
- IEEE VLSI-TSA (Technology, Systems, Applications) program committee, 2022
- IEEE-IEDM (Intl. Electron Devices Meeting)
    - Emerging Device & Computing Technology (EDT) program committee, 2021-2022

    - Session chair, 2021-2022, San Francisco CA
- IEEE-SISC (Semiconductor Interface Specialists Conference), 2020
- IEEE-VLSI Technology Symposium, 2015–2019
    - Publications Co-Chair, 2019, Kyoto, Japan
    - Session chair, 2018, Honolulu, HI
    - Focus Session Leader, 2018, Honolulu, HI
    - Focus Session Organizer, 2017, Kyoto, Japan
    - Publications Co-Chair, 2016, Honolulu, HI
    - Session chair, 2016, Honolulu, HI
    - Session chair, 2015, Kyoto, Japan
- IEEE-DRC (Device Research Conference)*, 2006–present
    - Member of Board of Trustees, 2014–present
    - General Chair, 2015
    - Chair of Technical Program Committee (TPC), 2014
    - Vice-Chair of TPC, 2013
    - Session chair, 2012 and 2006
    - Evening "rump session" organizer, 2011, 2010, 2007
- AVS (American Vacuum Society) Meeting Session Chair, Long Beach, CA 2018
- Stanford-IMEC Resistive Memory Workshop, 2018
- Graphene 2018, Session Chair, Dresden, Germany, 2018
- EDISON'20, Session Chair, Buffalo, NY 2017
- MRS (Materials Research Society) Spring Meeting, 2017, Phoenix, AZ
    - Co-Organizer of "Symposium: Phase-Change Materials and Applications"
- IEEE-IRPS (International Reliability Physics Symposium)
    - XT Committee member, 2017, Monterey, CA
    - XT Committee member, 2016, Pasadena, CA
- ESSDERC (European Solid-State Device Research Conference)
    - North America Publicity Co-Chair, 2017, Leuven, Belgium
    - Session chair, 2016, Lausanne, Switzerland
- IEEE-SNW (Silicon Nanoelectronics Workshop) Session chair, 2016, Honolulu, HI
- E-MRS (European Materials Research Symposium) Session chair, 2016, Lille, France
- MRS (Materials Research Society) Spring Meeting, 2015, San Francisco, CA
    - Co-Organizer of "Symposium: Nanoscale Heat Transport – From Fundamentals to Devices"
- PTES (International Conference on Phononics and Thermal Energy Science), Shanghai, 2013
    - Session chair, 2013
- DATE (Design, Automation, and Test in Europe), 2012
    - Organizer, "The Device-to-System Spectrum – A Tutorial on IC Design with Nanomaterials"
- APS (American Physical Society) March Meeting, 2012
    - Focus session organizer, "Carbon Nanotubes and Related Nanomaterials"
- Nano-DDS (Devices for Defense & Security), 2011
    - Focus session organizer, "Hybrid Molecular & Nanoscale CMOS-Based Architectures"
- IEEE-IEDM (Intl. Electron Devices Meeting)
    - NDT (Nano Device Technology) program committee, 2010–2011
    - Session chair, 2010
- MRS (Materials Research Society) Fall Meeting, Session chair, Boston, 2010
- IEEE-UGIM (University Government Industry Micro/Nano) Symposium, Session chair, Purdue, 2010
- IEEE-ISRDS (Intl. Semiconductor Device Research Symposium), 2009
    - Session chair, ISDRS 2009 and 2007

* Longest-running IEEE electron device conference, since 1942.

- ECS (Electrochemical Society) Meeting, Session chair, 2007
- IEEE-GLSVLSI (Great Lakes VLSI) Symposium, Session chair, 2007
- IEEE-SISPAD (Simulation of Semiconductor Processes and Devices), Session chair, 2006

University Committees and Service

At Stanford and SLAC

- SNF Advisory Committee, 2024 – present
- EE Faculty Search Committee Chair, 2023 – present
- Stanford-SLAC Advisor for Nano/Microelectronics, 2022 – present
- EE Distinguished Lecturer Colloquium Series (co-chair), 2022 – 2023
- SNSF Advisory Council, 2022 – present
- Shoucheng Zhang Graduate Fellowship Committee, 2022 – present
- EE Executive Committee (ExCom), 2021 – present
- Ad hoc advisory committee to Dean Jennifer Widom on nanofabrication facilities, 2021 – present
- SystemX, Heterogeneous Integration Focus Area (lead), 2015 – present
- EE Culture, Equity, and Inclusion Committee (CEI) Chair, 2019 – 2022
- EE Academic Affairs Committee (AAC), 2013 – 2021
- MSE Faculty Search Committee, 2019
- Stanford-IMEC Resistive Memory Workshop co-organizer, 2018
- EE Faculty Search Committee, 2017 and 2018
- Rising Stars Committee, 2017
- Stanford Faculty Scholars Committee, 2017
- Stanford Nano Shared Facilities Working Group, 2017
- SNF Shared Nanofabrication Future Plans Committee, 2015 – 2016
- Precourt Institute for Energy, Stanford Interdisciplinary Graduate Fellowship Committee, 2015
- EE21 Committee, 2014 – 2015
- EE Web Site Committee, 2013 – 2015
- SoE Makers Commons Committee, 2013

At UIUC

- ECE Colloquium Committee, 2007 – 2013
- ECE Public Relations Committee, 2009 – 2013
- ECE Nanotechnology Committee, 2009 – 2013
- Beckman Institute Program Advisory Committee, 2009 – 2012
- ECE Graduate Recruitment Committee, 2007 – 2012
- ECE Advisory Committee, 2011 – 2012
- ECE Curriculum Committee, 2010 – 2012
- ECE Graduate Committee, 2009 – 2010
- ECE New Building Committee, 2008 – 2009
- ECE Graduate Admissions Committee, 2007 – 2008
- ECE Fellowship Committee, 2007 – 2008
- MNTL Characterization Lab Committee, 2007 – 2008

Editor and Reviewer Service

- Editorial Board of *2D Materials* (2019 – 2021)
- Editorial Board of *Nano Research*
- Proposal reviewer for:
  - National Science Foundation (NSF) Electronics, Photonics, and Magnetic Devices (EPMD), Thermal Transport Processes (TTP), Division of Materials Research (DMR)
  - Air Force Office of Scientific Research (AFOSR), Army Research Office (ARO)
- Journal reviewer for:

- Science, Proc. Natl. Academy of Sciences, Nano Research
- Nature, Nature Nanotechnology, Nature Materials, Nature Communications
- Nano Letters, ACS Nano, ACS Appl. Materials & Interfaces, 2D Materials
- IEEE Trans. Nanotechnology, IEEE Trans. Electron Devices, IEEE Electron Device Letters, IEEE Trans. Computer Aided Design, IEEE Trans. Components and Packaging Technologies
- Physical Review B, X, Letters; Applied Physics Letters, Journal of Applied Physics
- Nanotechnology, Journal of Physics: Condensed Matter, Solid-State Electronics
- Journal of Computational Electronics, Journal of Heat Transfer

Teaching and Advising

- EE 101A, "Circuits I," 2020– (most recent evaluation: 4.4 out of 5.0)
- EE 323, "Energy in Electronics," 2014– (average evaluation: 4.5 out of 5.0)
- EE 216, "Principles & Models of Semiconductor Devices," 2014– (average evaluation: 4.4 out of 5.0)
- EE 116, "Semiconductor Device Physics," Spring 2014–2019 (average evaluation: 4.5 out of 5.0)
- ECE 340, "Semiconductor Electronics," 2012–2013 (average evaluation: 4.6 out of 5.0)
- ECE 565, "Energy Dissipation in Electronics," 2011
- ECE 440, "Solid State Electronics," 2007–2011 (average evaluation: 4.7 out of 5.0)
- ECE 598EP, "Hot Chips: Atoms to Heat Sinks," 2008–2010 (average evaluation: 4.7 out of 5.0)
- Undergraduate academic advisees, >100 students total:
  - ~40 at Stanford (2013–present), ~70 at UIUC (2007–2013)
- Classroom instruction, > 850 students total:
  - At Stanford (2013–): ~300 undergrads (EE 101A, 116) and ~160 grad students (EE 216, 323)
  - At UIUC (2007–2013): ~340 undergrads (ECE 340) and ~60 grad students (ECE 565)

Tutorials, Software and Other Educational Initiatives

29. "Fundamental, Thermal, and Energy Limits of PCM and RRAM," *Tutorial at MRS Fall Meeting*, Boston MA, Nov 2022
28. "Nanoelectronics & Heterogeneous Integration with 2D Materials," *Short Course at Nano-KISS* (Korean Intl. Summer School on Nanoelectronics), Korea, Feb 2020
27. "(Clarifying) A Few Alternative Facts About 2D Materials," *Tutorial at 2D Materials: Fundamentals to Spintronics Workshop*, Natal, Brazil, Sep 2019. https://www.youtube.com/watch?v=9RsgQEIobdI
26. "What Are Two-Dimensional Materials Good For?" *Tutorial at 2D Materials: Fundamentals to Spintronics Workshop*, Natal, Brazil, Sep 2019. https://www.youtube.com/watch?v=_pCqJAkpsxQ
25. "Fundamental, Thermal, and Energy Limits of Phase-Change Memory," *Tutorial at Eurotherm Nanoscale & Microscale Heat Transfer VI (NMHT)*, Levi, Finland, Dec 2018
24. "Benefits of Heterogeneous Integration: The N3XT 1000x," *Tutorial at SSDM (Intl. Conference on Solid State Devices & Materials)*, Tokyo Japan, Sep 2018
23. "Fundamental, Thermal, and Energy Limits of PCM and ReRAM," *Tutorial at IEDM (Intl. Electron Devices Meeting)*, San Francisco, CA, Dec 2017
22. "Fundamentals and Ultimate Scaling Limits of Phase-Change Memory," *Tutorial at 75th DRC (Device Research Conference)*, Notre Dame, IN, Jun 2017
21. "Energy, Thermal, and Thermoelectric Effects in Nanoscale Devices," *Short Course at University of Pisa*, Pisa, Italy, Jun 2017
20. "Thermal and Related Properties of 2D Materials and Devices," *Short Course at 2D Materials Workshop*, Univ. Minnesota, Jun 2016, http://minic.umn.edu/2d-materials/summer-program-2016
19. "Thermal Resistance in Electronic Devices," *Short Course on nanoHUB-U*, May 2016, https://nanohub.org/courses/tred
18. "Electrical & Thermal Transport in 2D Materials and Devices," *Short Course at Nano-KISS* (Korean Intl. Summer School on Nanoelectronics), ETRI, Daejeon Korea, Oct 2015

17. "Device and Thermal Fundamentals and Applications of 2D Materials," *NanoTechnology for Defense Conference (NT4D)*, Chantilly VA, Nov 2014
16. "Thermoelectrics 101," *GCEP Symposium*, Stanford CA, Oct 2014. http://gcep.stanford.edu/learn/energy101.html
15. `S2DS`: Stanford 2D Semiconductor simulation tool for monolayer transistors, available at nanoHUB.org
14. "Energy in Nanoelectronics," *Tsukuba Summer Lecture Series*, Tsukuba, Japan, Jul-Aug 2014
13. "The Device-to-System Spectrum – A Tutorial on IC Design with Nanomaterials," *Design, Automation & Test in Europe (DATE)*, Dresden, Germany, Mar 2012
12. Web-Enabled Remote Lab: An interface for measuring electronic devices through the Internet. Devices in the lab can be measured on any web browser (even on an iPhone), anywhere in the world. Developed with undergraduates S. Dutta and S. Prakash. First tested in course ECE 440, Spring 2010. Source code at http://remotelab.sourceforge.net. Details published in *IEEE Trans. Educ.* (2011).
11. Graduate Course Online: ECE 598 *Hot Chips: Atoms to Heat Sinks* (Fall 2010) course notes available at http://poplab.stanford.edu and audio through http://nanohub.org
10. `GFETtool`: Graphene transistor electro-thermal simulation tool, available at nanoHUB.org
9. `nanoJoule`: Carbon nanotube electro-thermal simulation tool, available at nanoHUB.org
8. `CNTmob`: Carbon nanotube mobility simulation tool, available at nanoHUB.org
7. "Carbon Nanoelectronics: Towards Energy-Efficient Computing," *Design, Automation & Test in Europe (DATE)*, Dresden, Germany, Mar 2010
6. D. Chen, S. Chilstedt, C. Dong, E. Pop, "What Everyone Needs to Know About Carbon-Based Electronics," *DAC.com Knowledge Center Article*, www.dac.com, Mar 2010
5. "Graphene Thermal Physics," *IEEE Device Research Conference (DRC)*, State College PA, Jun 2009
4. K-12 Outreach: Series of talks on "*Memory Technology: Putting the* nano *in your iPod*" presented at University High School, Urbana IL (Spring 2008). Audio and video available at nanoHUB.org
3. Undergraduate Course Online: ECE 440 *Solid-State Electronics* (Fall 2008) course notes available at http://poplab.stanford.edu and audio through nanoHUB.org
2. "Electro-Thermal Interaction, Modeling and Measurement in Nanoscale Devices," *Great Lakes VLSI (GLSVLSI) Conference*, Lago Maggiore, Italy, Mar 2007
1. `MONET`: Monte Carlo simulation code for transport and heat generation in silicon devices, available at http://poplab.stanford.edu along with multimedia and simulation results

Journal Publications (h-index: 100; 39,050+ citations in Google Scholar)

in review: gray; students and post-docs supervised: **bold**

285. **C.A. Nattoo**, **T. Peña**, **K. Nassiri Nazif**, T. Ngo, **X. Wu**, S. Rahimisheikh, M. Moinpour, J. Hadermann, E. Pop, "Optoelectronic Properties of Atomic Layer Deposited and Sputtered MoS_2 Films," in review (2025)
284. **J.-S. Ko**, A.B. Shearer, **A.T. Hoang**, **Y.-M. Lee**, **R.K.A. Bennett**, A.J. Mannix, S.F. Bent, E. Pop, K.C. Saraswat, "Direct Atomic Layer Deposition by Precursor Engineering for Sub-1 nm Equivalent Oxide Thickness Top-Gate Stack on Monolayer MoS_2," in review (2025)
283. **K. Neilson**, C. Mokhtarzadeh, M. Jaikissoon, **R.K.A. Bennett**, P. Buragohain, A.V. Penumatcha, S.S.K. Pinnepalli, C. Rogan, A. Kozhakhmetov, K. Maxey, S. Clendenning, E. Pop, M. Metz, U. Avci, K.P. O'Brien, "Threshold Voltage Control through Solvent Doping of Monolayer MoS_2 Transistors," in review (2025)
282. F. Xia, T. Xia, **H. Su**, L. Gan, Q. Hu, W. Wang, R. Huang, T. Bai, Y. Chen, C. Ma, G. Long, S.X. Wang, E. Pop, L.-M. Peng, Y. Hu, "Flexible Radio-Frequency Transistors Exceeding 100 GHz," in review (2025)
281. S. Abdollahramezani, O. Hemmatyar, I. Zeimpekis, S. Lepeshov, A. Krasnok, **A.I. Khan**, **K.M. Neilson**, C. Teichrib, T. Brown, E. Pop, D.W. Hewak, M. Wuttig, A. Alù, O.L. Muskens, A. Adibi,

"Enhanced Meta-Displays Using Advanced Phase-Change Materials," in review, pre-print arXiv: 2107.12159 (2023)

280. **H. Su**, **Y.-M. Lee**, **T. Peña**, **S. Fultz-Waters**, J. Kang, **Ç. Köroğlu**, **S. Wahid**, C.J. Newcomb, Y.S. Song, H.-S.P. Wong, S.X. Wang, E. Pop, "High-field Breakdown and Thermal Characterization of Indium Tin Oxide Transistors," in review (2025)
279. **K. Neilson**, **M. Jaikissoon**, D. Zakhidov, **T. Peña**, A. Salleo, K. Saraswat, **E. Pop**, "Direct X-Ray Measurements of Strain in Monolayer MoS_2 from Capping Layers and Geometrical Features," in review (2025)
278. **M.A. Wang**, E. Pop, "Monte Carlo Simulation of Electrical Transport with Joule Heating and Strain in Monolayer MoS_2 Devices," in review (2025)
277. **S. Wahid**, K. Toprasertpong, M. Islam, A. Kumar, M.A. Ul Karim, H. Simka, H.-S.P. Wong, E. Pop, "Role of Oxygen Deficiencies on the Stability of Indium Tin Oxide Transistors," in review (2025)
276. **L. Hoang**, **A.I. Khan**, **R.K.A. Bennett**, H.-m. Kim, M. Hocking, Z. Zhang, A.R. Choi , I.-K. Oh, A.J. Mannix, E. Pop, "Enabling *P*-type Conduction in Bilayer WS_2 with NbP and TaP Topological Semimetal Contacts," in review (2025)
275. **Ç. Köroğlu**, A. Daus, **S. Wahid**, M. Muñoz Rojo, E. Pop, "Fringe Current Correction for Unpatterned-Channel Thin Film Transistors Including Contact Resistance and Velocity Saturation Effects," in review (2025)
274. **M. Islam**, **S.M. Bohaichuk, T.D. Brown**, C. Perez, C. Zhang, T.J. Park, A.A. Talin, S. Ramanathan, S. Kumar, E. Pop, "Electro-optical Mott neuron," in review (2025)
273. **F.U. Nitta**, **K. Nassiri Nazif**, E. Pop, "Transition Metal Dichalcogenide Solar Cells for Indoor Energy harvesting," *Device*, in press (2025)
272. A. Krayev, E. Isotta, **L. Hoang**, **J.A. Yang**, **K. Neilson**, M. Wang, N. Haughn, G.-Y. Liu, E. Pop, A. Mannix, O. Balogun, C.-F. Wang, "Excitation laser energy dependence of the gap-mode TERS spectra of WS_2 and MoS_2 on silver," *ACS Photonics*, in press (2025)
271. **J.-S. Ko**, A.B. Shearer, S. Lee, **K. Neilson**, **M. Jaikissoon**, K. Kim, S.F. Bent, E. Pop, K.C. Saraswat, "Achieving 1-nm-Scale Equivalent Oxide Thickness Top Gate Dielectric on Monolayer Transition Metal Dichalcogenide Transistors with CMOS-Friendly Approaches," *IEEE Trans. Electron Devices* **72**, 1514-1519 (2024)
270. **R.K.A. Bennett**, **L. Hoang**, **C. Cremers**, A.J. Mannix, E. Pop, "Mobility and Threshold Voltage Extraction in Transistors with Gate-Voltage-Dependent Contact Resistance," *npj 2D Materials & Applications* **9**, 13 (2025)
269. **J.-S. Ko**, S. Lee, **R.K.A. Bennett**, **K. Schauble**, **M. Jaikissoon**, **K. Neilson**, **A.T. Hoang**, A.J. Mannix, K. Kim, K.C. Saraswat, E. Pop, "Sub-Nanometer Equivalent Oxide Thickness and Threshold Voltage Control Enabled by Silicon Seed Layer on Monolayer MoS_2 Transistors," *Nano Letters* **25**, 2587–2593 (2025)
268. **A.I. Khan**, A. Ramdas, E. Lindgren, H.-M. Kim, B. Won, **X. Wu**, K. Saraswat, C.-T. Chen, Y. Suzuki, F.H. da Jornada, I.-K. Oh, E. Pop, "Exceptional Reduction of Electrical Resistivity in Ultrathin Non-Crystalline NbP Semimetal," *Science* **387**, 62–67 (2025)
267. S. Vaziri, C. Perez, I.M. Datye, H. Kwon, C.F. Hsu, **M. Chen**, M. Noshin, T.Y. Lee, M. Asheghi, W.Y. Woon, E. Pop, K.E. Goodson, S.S. Liao, X.Y. Bao, "AlN: an Engineered Thermal Material for 3D Integrated Circuits," *Adv. Functional Mater.* **35**, 2402662 (2025)
266. K. Fan, A. Moradifirouzabadi, **X. Wu**, Z. Li, F. Ponzina, **A. Persson**, V. Adve, E. Pop, T. Rosing, M. Kang, "SpecPCM: A Low-power PCM-based In-Memory Computing Accelerator for Full-stack Mass Spectrometry Analysis," *IEEE J. Explor. Solid-State Comput. Devices Circuits (JxCDC)* **10**, 161-169 (2024)
265. **H. Su**, H. Kwon, F. Xue, N. Sato, U. Bhat, W. Tsai, M. Bosman, M. Asheghi, K.E Goodson, E. Pop, S.X. Wang, "Thermal Characterization of Ultrathin MgO Tunnel Barriers," *Nano Letters* **24**, 14567-14573 (2024)

264. **M. Jaikissoon**, **Ç. Köroğlu**, **J.A. Yang**, **K.M. Neilson**, K.C. Saraswat, E. Pop, "CMOS-compatible Strain Engineering of Monolayer Semiconductor Transistors," *Nature Electronics* **7**, 885-891 (2024)
263. **L. Hoang**, **M. Jaikissoon**, **Ç. Köroğlu**, Z. Zhang, **R.K.A. Bennett**, J.-H. Song, **J.A. Yang**, **J.-S. Ko**, M.L. Brongersma, K.C. Saraswat, E. Pop, A.J. Mannix, "Understanding the Impact of Contact-Induced Strain on the Electrical Performance of Monolayer WS_2 Transistors," *Nano Letters* **24**, 12768-12774 (2024)
262. T.D. Brown, A. Zhang, **F.U. Nitta**, E.D. Grant, J.L. Chong, J. Zhu, S. Radhakrishnan, **M. Islam**, E.J. Fuller, A.A. Talin, P.J. Shamberger, E. Pop, R.S. Williams, S. Kumar, "Axon-like Active Signal Transmission," *Nature* **633**, 804–810 (2024)
261. A. Michail, **J.A. Yang**, K. Filintoglou, N. Balakeras, **C.A. Nattoo**, **C.S. Bailey**, **A. Daus**, J. Parthenios, E. Pop, K. Papagelis, "Biaxial Strain Transfer in Monolayer MoS_2 and WSe_2 Transistor Structures," *ACS Nano* **16**, 49602–49611 (2024)
260. A.P. Saunders, **V. Chen**, J. Wang, A.C. Johnson, A.S. McKeown-Green, H.J. Zeng, T.K. Mac, T. Trinh, T.F. Heinz, E. Pop, F. Liu, "Direct Exfoliation of Nanoribbons from Bulk van der Waals Crystals," *Small* **20**, 2403504 (2024)
259. Z. Zhang, **L. Hoang**, M. Hocking, J. Hu, G. Zaborski Jr., P. Reddy, J. Dollard, D. Goldhaber-Gordon, T.F. Heinz, E. Pop, A.J. Mannix, "Chemically Tailored Growth of 2D Semiconductors *via* Hybrid Metal-Organic Chemical Vapor Deposition," *ACS Nano* **18**, 25414–25424 (2024)
258. S. Bin Hamid, **A.I. Khan**, H. Zhang, A.V. Davydov, E. Pop, "Low-Energy Spiking Neural Network using $Ge_4Sb_6Te_7$ Phase Change Memory Synapses," *IEEE Electron Device Lett.* **45**, 1819-1822 (2024)
257. **K.M. Neilson**, S. Hamtaei, **K. Nassiri Nazif**, J.M. Carr, S. Rahimisheikh, **F.U. Nitta**, G. Brammertz, J.L. Blackburn, J. Hadermann, K.C. Saraswat, O.G. Reid, B. Vermang, A. Daus, E. Pop, "Toward Mass-Production of Transition Metal Dichalcogenide Solar Cells: Scalable Growth of Photovoltaic-Grade Multilayer WSe_2 by Tungsten Selenization," *ACS Nano* **18**, 24819–24828 (2024)
256. **S. Wahid**, **A. Daus**, **V. Chen**, E. Pop, "Flexible Nanoscale Amorphous Oxide Transistors with a Gold-Assisted Transfer Method," *ACS Appl. Mater. Interfaces* **16**, 42476-42480 (2024) (**Selected as Cover Article**)
255. **H. Su**, H. Kwon, W. Hwang, F. Xue, **Ç. Köroğlu**, W. Tsai, M. Asheghi, K.E Goodson, S.X. Wang, E. Pop, "Thermal Optimization of Two-terminal SOT-MRAM," *J. Appl. Phys.* **136**, 013901 (2024)
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379. Z. Zhang, **L. Hoang**, M. Hocking, Z. Peng, J. Hu, M. Pendharkar, E.D.S. Courtney, G. Zaborski Jr., P. Reddy, J. Dollard, M. A. Kastner, D. Goldhaber-Gordon, T.F. Heinz, E. Pop, A.J. Mannix, "Chemically Tailored and Phase-Selective Growth of 2D Semiconductors via Hybrid Metal-Organic Chemical Vapor Deposition," *MRS Fall Meeting*, Dec 2024, Boston MA
378. K. Jana, S. Liu, K. Toprasertpong, Q. Jiang, **S. Wahid**, J. Kang, J. Chen, E. Pop, H.-S.P. Wong, "Modeling and Understanding Threshold Voltage and Subthreshold Swing in Ultrathin Channel Oxide Semiconductor Transistors," *SISPAD*, Sep 2024, San Jose CA
377. **K.M. Neilson**, S. Hamtaei, **K. Nassiri Nazif**, J.M. Carr, S. Rahimisheikh, **F.U. Nitta**, G. Brammertz, J.L. Blackburn, J. Hadermann, K.C. Saraswat, O.G. Reid, B. Vermang, A. Daus, E. Pop, "Sequential Growth of Wafer-Scale WSe_2 for Photovoltaic Applications," *41st European Photovoltaic Solar Energy Conference & Exhibition (EU PVSEC 2024)*, Sep 2024, Vienna, Austria
376. **S. Wahid**, B. Saini, P. McIntyre, A. Daus, E. Pop, "Flexible Ferroelectric Memory using Non-adhesive Transfer Layer," *6th IEEE International Flexible Electronics and Technology Conference (IFETC)*, Sep 2024, Bologna, Italy
375. **J.A. Yang**, **A. Bora**, A. Daus, Z. Zhang, **L. Hoang**, A.J. Mannix, E. Pop, "Flexible Monolayer WS_2-Based Pseudo-CMOS Circuits for In-Sensor Computing," *6th IEEE International Flexible Electronics and Technology Conference (IFETC)*, Sep 2024, Bologna, Italy
374. **K. Neilson**, M. McDonough, **A.T. Hoang**, M. Hilse, **T. Peña**, S. Law, E. Pop, "Molecular Beam Epitaxy as a Contact to p-type Monolayer WSe_2," *SRC TECHCON*, Sept 2024, Austin TX (**Top 10 Best Student Presenter Award**)
373. **L. Hoang**, **M. Jaikissoon**, **C. Köroğlu**, Z. Zhang, **R.K.A. Bennett**, J.H. Song, **J.A. Yang**, **J.-S. Ko**, M.L. Brongersma, K.C. Saraswat, E. Pop, A.J. Mannix, "Contact-induced Strain for Enhanced Performance in Monolayer WS_2 Transistors," *SRC TECHCON*, Sep 2024, Austin TX
372. A. Shearer, **J.-S. Ko**, K. Saraswat, E. Pop, S.F. Bent, "Impact of ALD Precursor Choice on Nucleation and Growth of Dielectrics on 2D Materials," *ALD/ALE Conference*, Aug 2024, Helsinki Finland
371. Q.L. Nguyen, J. Simoni, O. Fedchenko, S. Chernov, A. Mishra, Z. Zhang, **L. Hoang**, O. Tkach, F. Scholz, M. Scholz, K. Rossnagel, D. Ratner, M. Hoesch, N. Sirica, E. Pop, A. Mannix, H.-J. Elmer, G. Schoenhense, "Spectral Imaging of 2D magnetic semiconductor V-WS_2 using ToF-XPEEM," *13th International Conference on LEEM PEEM*, Aug 2024, Montreal, Canada
370. **K.M. Neilson**, S. Hamtaei, **K. Nassiri Nazif**, J.M. Carr, S. Rahimisheikh, **F.U. Nitta**, G. Brammertz, J.L. Blackburn, J. Hadermann, K.C. Saraswat, O.G. Reid, B. Vermang, A. Daus, E. Pop, "Scalable production of photovoltaic-grade WSe_2 via tungsten selenization," *52nd IEEE Photovoltaic Specialists Conference (PVSC 52)*, Jun 2024, Seattle WA
369. **J.A. Yang**, E. Reato, T. Knobloch, **J.-S. Ko**, Z. Zhang, A. Mannix, K. Saraswat, T. Grasser, M. Lemme, E. Pop, "Quantifying Defect-Mediated Electron Capture and Emission in Flexible Monolayer WS_2 Field-Effect Transistors," *IEEE Device Research Conference (DRC)*, Jun 2024, College Park MD
368. **S. Wahid**, E. Pop, "Oxygen Engineering for Positive Bias Stress Stability of Top-Gated Indium Tin Oxide (ITO) Transistors," *IEEE Device Research Conference (DRC)*, Jun 2024, College Park MD

367. **X. Wu**, **A.I. Khan**, H.-S.P. Wong, E. Pop, "Optimizing $TiTe_2/Ge_4Sb_6Te_7$ Superlattices Towards Low-Power, Fast-Speed, and High-Stability Phase Change Memory," *IEEE Device Research Conference (DRC)*, Jun 2024, College Park MD
366. E. Reato, P. Palacios, **J.A. Yang**, **S. Wahid**, **M. Jaikissoon**, **J.-S. Ko**, A. Daus, M. Saeed, K.C. Saraswat, R. Negra, E. Pop, M.C. Lemme, "Nanoscale MoS_2 Transistors on Polyimide for Radio-Frequency Operation," *IEEE Device Research Conference (DRC)*, Jun 2024, College Park MD
365. **R.K.A. Bennett**, **L. Hoang**, **C. Cremers**, A.J. Mannix, E. Pop, "Improved Mobility Extraction for Transistors with Gated Contacts," *IEEE Device Research Conference (DRC)*, Jun 2024, College Park MD
364. S.B. Hamid, **A.I. Khan**, H. Zhang, **X. Wu**, A.V. Davydov, E. Pop, "Energy-Efficient Spiking Neural Network Based on $Ge_4Sb_6Te_7$ Phase-Change Memory Synapses," *IEEE Device Research Conference (DRC)*, Jun 2024, College Park MD
363. **J.-S. Ko**, A. Shearer, S. Lee, **K. Neilson**, **M. Jaikissoon**, K. Kim, S. Bent, K. Saraswat, E. Pop "Achieving 1-nm-Scale Equivalent Oxide Thickness Top Gate Dielectric on Monolayer Transition Metal Dichalcogenide Transistors with CMOS-Friendly Approaches," *IEEE VLSI Tech. Symp*., Jun 2024, Honolulu HI (**Selected as highlight in Nature Electronics**)
362. A. Shearer, **J.-S. Ko**, K. Saraswat, E. Pop, S.F. Bent, "The Impact of ALD Precursor Choice on Nucleation and Growth of Dielectrics on 2D Materials," *ECS Meeting*, May 2024, San Francisco CA
361. **X. Wu**, **A.I. Khan**, H. Zhang, H. Yu, A.V. Davydov, I. Takeuchi, H.-S.P. Wong, E. Pop, "Ultrathin $Sb_2Te_3/Ge_4Sb_6Te_7$ Superlattices for Low-Power and High-Speed Phase Change Memory," *MRS Spring Meeting*, April 2024, Seattle CA
360. **A.I. Khan**, E.R. Lindgren, A. Ramdas, B. Won, **X. Wu**, H. Kim, H.-S.P. Wong, F. Jornada, I.-K. Oh, Y. Suzuki, E. Pop, "Probing The Low-Resistivity in Sub-5 nm Thin Nanocrystalline NbP and TaP Semimetals," *MRS Spring Meeting*, April 2024, Seattle WA
359. J. Zhao, **A.I. Khan**, M. Efremov, Z. Ye, **X. Wu**, H.-S.P. Wong, E. Pop, L. Allen, "Thin-film Nanocalorimetry study of the Melting Transitions in 2D Phase-Change Superlattices," *MRS Spring Meeting*, April 2024, Seattle WA
358. **R.K.A. Bennett**, **L. Hoang**, **C. Cremers**, A.J. Mannix, E. Pop, "A Method for Extracting 2D Semiconductor Mobility in Transistors with Gate-Voltage-Dependent Contact Resistance," *MRS Spring Meeting*, April 2024, Seattle WA (**Best Student Presentation Award**)
357. **J.A. Yang**, E. Pop, "A Tale from the Queer Resistance: Healing and Activism from with(in) Materials Science," *MRS Spring Meeting*, Apr 2024, Seattle WA
356. **J.A. Yang**, **L.A. Hoang**, **T. Peña**, Z. Zhang, A.J. Mannix, E. Pop, "Effects of High-κ Dielectric Encapsulation and Carrier Density on Raman Scattering in Synthetic Monolayer WS_2," *MRS Spring Meeting*, April 2024, Seattle WA
355. **C.A. Nattoo**, **T. Peña**, **K. Nassiri Nazif**, A.C. Johnson, F. Liu, E. Pop, "Rapid Detection of Defects in Monolayer 2D Semiconductors by Polarized Raman Spectroscopy," *MRS Spring Meeting*, Apr 2024, Seattle WA
354. A.J. Gabourie, C.J. McClellan, C.A. Polanco, D. Donadio, S. Chowdhury, S. Mitra, E. Pop, "Accelerated Multi-Scale Thermal Modeling of Advanced Integrated Circuits (MUSCLE-Therm)," *GOMACTech-24*, Mar 2024, Charleston SC
353. **L. Hoang**, **M. Jaikissoon**, Z. Zhang, K.C. Saraswat, E. Pop, A.J. Mannix, "Contact-induced Strain for Enhanced Performance in Monolayer WS_2 Transistors," *APS March Meeting*, Mar 2024, Minneapolis MN
352. **M.A. Wang**, E. Pop, "Electro-Thermal Monte Carlo Simulation of Monolayer MoS_2," *APS March Meeting*, Mar 2024, Minneapolis MN
351. T. Knobloch, D. Waldhoer, M. Davoudi, A. Karl, P. Khakbaz, M. Matzinger, Y. Zhang, **K. Smithe**, A. Nazir, C. Liu, Y. Illarionov, E. Pop, H. Peng, B. Kaczer, T. Grasser, "Modeling the Performance and Reliability of Two-Dimensional Semiconductor Transistors," *IEEE Intl. Electron Devices Meeting (IEDM)*, Dec 2023, San Francisco CA
350. **J.A. Yang**, **R.K.A. Bennett**, **L.A. Hoang**, Z. Zhang, **K.J. Thompson**, A.J. Mannix, E. Pop, "Mobility

Enhancement of Monolayer WS_2 from Biaxial Tensile Strain," *MRS Fall Meeting*, Nov 2023, Boston MA

349. **A.I. Khan**, E.R. Lindgren, **X. Wu**, H. Kim, A. Ramdas, B. Won, F. Jornada, K.E. Goodson, I.-K. Oh, H.-S.P. Wong, Y. Suzuki, E. Pop, " Unconventional Resistivity Scaling in Nanocrystalline NbP and TaP sub-5 nm Thin Film," *MRS Fall Meeting*, Nov 2023, Boston MA
348. **Ç. Köroğlu**, **A.J. Gabourie**, E. Pop, "Heat Dissipation in 2D Material Transistors: The Role of Interfaces and Contacts," *MRS Fall Meeting*, Nov 2023, Boston MA
347. **M.A. Wang**, E. Pop, "Monte Carlo Simulation of Joule Heating in Monolayer MoS_2 Devices," *MRS Fall Meeting*, Nov 2023, Boston MA
346. **A.I. Khan**, **X. Wu**, **A. Daus**, H. Kwon, K.E. Goodson, H.-S.P. Wong, E. Pop, "Novel Chalcogenide Superlattice-Based Energy-Efficient Phase-Change Memory for 3D Heterogeneous Integration," *AVS 69th International Symposium & Exhibition*, Nov 2023, Portland, OR (**Best Student Presenter Award**)
345. **K. Nassiri Nazif**, F.U. Nitta, **A. Daus**, K.C. Saraswat, E. Pop, "Efficiency Limit of Transition Metal Dichalcogenide Solar Cells," *1st Middle East and North Africa Solar Conference (MENA Solar Conference)*, Nov 2023, Dubai, UAE
344. R. Chen, Z. Fang, J. Fröch, Q. Tanguy, **A.I. Khan**, **X. Wu**, V. Tara, A. Manna, D. Sharp, C. Munley, Y. Zhao, K. Böhringer, M. Reynolds, E. Pop, A. Majumdar, "Nonvolatile transmissive metasurface with phase-only modulation," *Frontiers in Optics + Laser Science* (*FiO LS*), Oct 2023, Tacoma WA
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341. **J.-S. Ko**, Z. Zhang, S. Lee, **M. Jaikissoon**, **R.K.A. Bennett**, K. Kim, A.C. Kummel, P. Bandaru, E. Pop, K.C. Saraswat, "Ultrathin Gate Dielectric Enabled by Nanofog Aluminum Oxide on Monolayer MoS_2," *ESSDERC (European Solid-State Device Conference)*, Sep 2023, Lisbon Portugal
340. **S. Wahid**, **L. Hoang**, **A. Daus**, E. Pop, "Improving Bias Stress Stability of Indium Tin Oxide Transistors Up to 100-Fold," *SRC TECHCON*, Sep 2023, Austin TX
339. **A.I. Khan**, **X. Wu**, H. Kwon, H. Yu, **A. Daus**, K. Saraswat, I. Takeuchi, K.E. Goodson, H.-S.P. Wong, E. Pop, "Novel Epitaxial Nanocomposite and Superlattices Enabling Energy Efficient Neuro-inspired Phase Change Memory," *SRC TECHCON*, Sep 2023, Austin TX (**Top 10 TechCon Presenter Award**)
338. J. Zhao, **A.I. Khan**, M. Efremov, Z. Ye, X. Wu, H.-S.P. Wong, E. Pop, L. Allen, "Preliminary Nanocalorimetry Study of Phase-change Superlattices," *North American Thermal Analysis Society 49th Annual Conf. (NATAS)*, August 2023, Rockville MD
337. **S. Wahid**, **L. Hoang**, **A. Daus**, E. Pop, "Up to 100-fold Improvement of Threshold Voltage Stability in ITO Transistors," *IEEE Device Research Conference (DRC)*, Jun 2023, Santa Barbara CA
336. **M. Jaikissoon**, **J.-S. Ko**, E. Pop, K. Saraswat, "Local Back-Gate Monolayer MoS_2 Transistors with Channel Lengths Down to 50 nm and EOT ~ 1 nm Showing Improved Ion using Post-Metal Anneal," *IEEE Device Research Conference (DRC)*, Jun 2023, Santa Barbara CA
335. **K. Nassiri Nazif**, F.U. Nitta, **A. Daus**, K.C. Saraswat, E. Pop, "Efficiency Limit of Transition Metal Dichalcogenide Solar Cells," *50th IEEE Photovoltaic Specialists Conference (PVSC 50)*, June 2023, San Juan PR
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333. I.-K Oh, **A.I. Khan**, S. Qin, H.-S.P. Wong, E. Pop, S.F. Bent, "Dielectric-on-Metal (DoM) of Area-Selective Atomic Layer Deposition for Memory Devices," *7th Area Selective Deposition Workshop (ASD23)*, Apr 2023, Incheon Korea

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331. A. Shearer, **J.-S. Ko**, E. Pop, S. Bent, "Enhancing the Nucleation of Dielectrics on MoS_2 by Atomic Layer Deposition," *MRS Spring Meeting*, April 2023, San Francisco, CA
330. H.-L. Sinn, A. Kumar, E. Pop, A.K.M. Newaz, "Semimetal-Monolayer Transition Metal Dichalcogenides Photodetectors for Wafer-Scale Ultraviolet Photonics," *MRS Spring Meeting*, April 2023, San Francisco, CA
329. **S. Wahid**, **M. Islam**, C. Perez, T.D. Brown, **M.E. Chen**, M.A. Marcus, H. Ohldag, S. Kumar, E. Pop, "Understanding Oxygen Migration due to Contacts and Gate Bias-Stress in Indium Tin Oxide Transistors," *MRS Spring Meeting*, April 2023, San Francisco, CA
328. J. Zhao, **A.I. Khan**, M. Efremov, Z. Ye, **X. Wu**, H.-S.P. Wong, E. Pop, L. Allen, "Preliminary Study of Phase-change Superlattices via Thin Film Nanocalorimetry," *MRS Spring Meeting*, April 2023, San Francisco, CA
327. **M. Islam**, **C. Perez**, R. Bhattacharya, **S. Wahid**, T.D. Brown, M.A. Marcus, H. Ohldag, V. Gambin, S. Kumar, E. Pop, "Physics of Resistive Switching in $LaCoO_3$ revealed by X-ray Absorption Spectromicroscopy," *MRS Spring Meeting*, April 2023, San Francisco, CA
326. Q. Li, J.-H. Song, F. Xu, J. van de Groep, J. Hong, **A. Daus**, Y.J. Lee, A.C. Johnson, E. Pop, F. Liu, M.L. Brongersma, "A Monolayer Semiconductor Free-Space Electro-Optical Modulator," *APS March Meeting*, Mar 2023, Las Vegas NV
325. **K. Neilson**, M. Tie, **J.-K. Ko**, **M. Jaikissoon**, **J.A. Yang**, R. Chen, A. Majumdar, K. Saraswat, T.F. Heinz, E. Pop, "Lithographic Damage to Two Dimensional Materials Probed by Photoluminescence and Raman Spectroscopy," *APS March Meeting*, Mar 2023, Las Vegas NV
324. A.K.M. Newaz, H.-L. Sinn, A. Kumar, E. Pop, "Semimetal-Monolayer Transition Metal Dichalcogenides Photodetectors for Wafer-Scale Ultraviolet Photonics," *APS March Meeting*, Mar 2023, Las Vegas NV
323. C. Perez, **A.I. Khan**, **X. Wu**, E. Fuller, H.-S.P. Wong, M. Asheghi, E. Pop, A. Talin, S. Kumar, K.E Goodson, "Probing Phonon-Dominated Transport in Sb_2Se_3 Thin Films," *APS March Meeting*, Mar 2023, Las Vegas NV
322. **M. Islam**, **S.M. Bohaichuk**, T.D. Brown, C. Perez, C. Zhang, T.J. Park, A.A. Talin, S. Ramanathan, S. Kumar, E. Pop, "Origins of Visible Light Emission upon Resistive Switching in NbO_2," *APS March Meeting*, Mar 2023, Las Vegas NV
321. **S. Wahid**, **M. Islam**, C. Perez, T.D. Brown, **M.E. Chen**, M.A. Marcus, H. Ohldag, S. Kumar and E. Pop, "Contact-Induced Oxygen Scavenging in Indium Tin Oxide Transistors," *APS March Meeting*, Mar 2023, Las Vegas NV
320. **A.I. Khan**, **X. Wu**, B. Won, E.R. Lindgren, C. Perez, K.E. Goodson, Y. Suzuki, I.-K. Oh, H.-S.P. Wong, E. Pop, "Unconventional Resistivity Scaling in Polycrystalline NbP Thin Films," *APS March Meeting*, Mar 2023, Las Vegas NV
319. **X. Wu**, **A.I. Khan**, K. Kim, Z. Lee, H.-S.P. Wong, E. Pop, "Understanding Low Structural Relaxation in Phase-Change Chalcogenide Superlattices," *APS March Meeting*, Mar 2023, Las Vegas NV
318. **C.S. Bailey**, **K.M. Neilson**, E. Pop, "Improved P-Type Performance in Bilayer WSe_2 Transistors," *IEEE Semicon. Interface Specialist Conf. (SISC)*, Dec 2022, San Diego, CA
317. **S. Wahid**, **A. Daus**. A. Kumar, H.-S.P. Wong, E. Pop, "First Demonstration of Dual-Gated Indium Tin Oxide Transistors with Record Drive Current ~2.3 mA/μm at $L \approx 60$ nm and $V_{DS} = 1$ V," *IEEE Intl. Electron Devices Meeting (IEDM)*, Dec 2022, San Francisco CA
316. H. Yu, **A.I. Khan**, C. Wu, H. Zhang, A. Davydov, A. Mehta, M. Li, A.G. Kusne, E. Pop, I. Takeuchi, "Combinatorial Exploration of New Phase-Change Memory Materials for Neuromorphic Computing Applications," *MRS Fall Meeting*, Nov 2022, Boston MA

315. J. Zhao, J. Hui, **A.I. Khan**, Z. Ye, X. Wu, T. Lai, M. Efremov, H. Wang, E. Pop, L. Allen, "Revealing the crystallization kinetic in thin-film phase change material via 1,0000,000 K/s Nanocalorimetry," *MRS Fall Meeting*, Nov 2022, Boston MA
314. **A.I. Khan**, **X. Wu**, C. Perez, B. Won, I.-K. Oh, M. Asheghi, K.E. Goodson, H.-S.P. Wong, E. Pop, "Chalcogenide-Superlattice Interfaces and Intermixing Modulating Phase-Change Memory Performance," *MRS Fall Meeting*, Nov 2022, Boston MA (**Best Student Presenter Award**)
313. **X. Wu**, **A.I. Khan**, P. Ramesh, K. Saraswat, H.-S.P. Wong, E. Pop, "Engineering Superlattice Materials and Interfaces for Improved Resistance-Drift and Retention in Phase-Change Memory," *MRS Fall Meeting*, Nov 2022, Boston MA
312. R.M.A. Bona, **R.W. Grady**, E. Pop, R. Sordan, "Spread of the contact resistance in the channel of MoS_2 field-effect transistors," *Graphene Week 2022*, Sep 2022, Munich, Germany
311. C. Perez, **A.I. Khan**, **X. Wu**, T.D. Brown, H. Kwon, M. Asheghi, A.A. Talin, H.-S.P. Wong, S. Kumar, E. Pop, K.E. Goodson, "Revealing Interface-Controlled Transport Effects in GST-Based Superlattice Materials," *SRC TECHCON*, Sep 2022, Austin TX (**Top 10 TechCon Presenter Award**)
310. **C.S. Bailey**, **K.M. Neilson**, E. Pop, "Improved P-Type Performance in Bilayer WSe_2 Transistors," *SRC TECHCON*, Sep 2022, Austin TX (**Top 10 TechCon Presenter Award**)
309. **M.E. Chen**, C. Perez, **Ç. Köroğlu**, **A. Sood**, **V. Chen**, C. Swank, S. Ueda, A. McLeod, Z. Sobell, S. George, A.C. Kummel, K.E. Goodson, E. Pop, "Wide Band Gap Heat Spreaders and Thermal Interface Materials for Heterogeneous Integration," *SRC TECHCON*, Sep 2022, Austin, TX (**Top 10 TechCon Presenter Award**)
308. **A. Daus**, **K. Nassiri Nazif**, **S. Vaziri**, **V. Chen**, J. Hong, **Ç. Köroğlu**, N. Lee, **R.W. Grady**, **C.S. Bailey**, F. Nitta, **M.E. Chen**, H.R. Lee, A. Kumar, **K. Schauble**, S. Kananian, R. Islam, K.-H. Kim, J.-H. Park, **K. Brenner**, A.S.Y. Poon, M.L. Brongersma, K.C. Saraswat, E. Pop, "Flexible 2D Transistors and Solar Cells by Direct Transfer with Contacts," *Graphene 2022*, Jul 2022, Aachen, Germany
307. **C.A. Nattoo**, **K. Schauble**, **C.S. Bailey**, E. Pop, "Rapid Analysis of 2D Material Quality Using Raman Spectroscopy," *Graphene 2022*, Jul 2022, Aachen, Germany
306. E. Ber, **R.W. Grady**, E. Pop, E. Yalon, "Reducing Schottky Barrier Height vs. Width: Which is Most Effective in Improving Contact Resistance to Atomically Thin Semiconductors?" *Electronic Materials Conference (EMC)*, Jun 2022, Columbus OH
305. **M. Islam**, **S.M. Bohaichuk**, J.A. Roberts, C. Zhang, T.J. Park, **V. Chen**, A.A. Talin, S. Ramanathan, J.A. Fan, S. Kumar, E. Pop, "Visible Light Emission during Electrical Threshold Switching of NbO_2 Mott Switches," *Electronic Materials Conference (EMC)*, Jun 2022, Columbus OH
304. **L. Hoang**, **A. Daus**, **S. Wahid**, J. Kwon, **J.-S. Ko**, S. Qin, **M. Islam**, K.C. Saraswat, H.-S.P. Wong, E. Pop, "Bias Stress Stability of ITO Transistors and its Dependence on Dielectric Properties," *IEEE Device Research Conference (DRC)*, Jun 2022, Columbus OH
303. **M. Jaikissoon**, **J.A. Yang**, **K.M. Neilson**, E. Pop, K. Saraswat, "Mobility Enhancement of Monolayer MoS_2 Transistors using Tensile-Stressed Silicon Nitride Capping Layers," *IEEE Device Research Conference (DRC)*, Jun 2022, Columbus OH
302. **M. Islam**, R. Bhattacharya, C. Perez, T.D. Brown, R.S. Williams, V. Gambin, S. Kumar, E. Pop, "Electrically Triggered Spin-State Phase Transition in $LaCoO_3$," *IEEE Device Research Conference (DRC)*, Jun 2022, Columbus OH
301. **X. Wu**, **A.I. Khan**, P. Ramesh, C. Perez, K. Kim, Z. Lee, K.E. Goodson, K. Saraswat, H.-S.P. Wong, E. Pop, "Interface-Controlled Ultralow Resistance Drift and Its Origin in Superlattice Phase Change Memory," *IEEE Device Research Conference (DRC)*, Jun 2022, Columbus OH
300. **S. Wahid**, **A. Daus**, J. Kwon, S. Qin, **J.-S. Ko**, K.C. Saraswat, H.-S.P. Wong, E. Pop, "First Demonstration of Top-Gated ITO Transistors: Effect of Channel Passivation," *IEEE Device Research Conference (DRC)*, Jun 2022, Columbus OH
299. **A.I. Khan**, C. Perez, **X. Wu**, B. Won, K. Kim, H. Kwon, P. Ramesh, **K.M. Neilson**, M. Asheghi, K. Saraswat, Z. Lee, I.K. Oh, H.-S.P. Wong, K.E. Goodson, E. Pop "First Demonstration of $Ge_2Sb_2Te_5$-

Based Superlattice Phase Change Memory with Low Reset Current Density (~3 MA/cm^2) and Low Resistance Drift (~0.002 at 105ºC)," *IEEE VLSI Tech. Symp.*, Jun 2022, Honolulu HI (**Best Student Paper Award**)

298. **M. Muñoz Rojo**, **S. Deshmukh**, **E. Yalon**, **S. Vaziri**, **C. Koroglu**, R. Islam, **R.A. Iglesias**, K. Saraswat, E. Pop, "Thermal mapping of nanoscale filamentary hot spots in Resistive Memory Devices," *Nano 2022*, Jun 2022, Sevilla, Spain
297. T. Swoboda, X. Gao, **S. Deshmukh**, **C. Koroglu**, K. Zhu, F. Hui, N. Wainstein, C.M.M. Rosario, E. Yalon, M. Lanza, E. Pop, H. Hilgenkamp, M. Muñoz Rojo, "Spatially resolved thermometry of micro- and nano- devices using scanning thermal microscopy," *Nano 2022*, Jun 2022, Sevilla, Spain
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Reducing Pulse Widths," *E\PCOS (European Phase-Change and Ovonics Symposium)*, Catania Italy, Sep 2018

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225. **K. Schauble**, **E. Yalon**, D. Zakhidov, **S. Deshmukh**, **C.J. McClellan**, **S. Vaziri**, A.K. Sood, A. Salleo, E. Pop, "Interfacial Reactions and Doping Effects at Metal Contacts to Monolayer MoS_2," *SRC TECHCON*, Sep 2018, Austin TX
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216. J. Zheng, A. Khanolkar, P. Xu, S. Colburn, **S. Deshmukh**, J. Myers, J. Frantz, E. Pop, N. Boechler, A. Majumdar, "Non-volatile All-Optical Quasi-Continuous Switching in GST-on-Silicon Microring Resonators," *CLEO 2018*, May 2018, San Jose CA
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201. S. Chen, **A. Sood**, E. Pop, K. Goodson, D. Donadio, "Largely tunable anisotropic thermal conductivity of pristine and lithiated MoS_2," *APS Meeting of the Far West Section*, Nov 2017, Merced CA
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167. **K.K.H. Smithe**, E. Pop, "Large-Grain Synthesis of Monolayer $MoSe_2$ and WSe_2," *MRS Fall Meeting*, Nov 2016, Boston MA
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150. **N.C. Wang**, **E.A. Carrion**, **M.C. Tung** and E. Pop, "Reducing Graphene Device Variability with Yttrium Sacrificial Layers," *SRC TECHCON*, Sep 2015, Austin TX
149. **K.K.H. Smithe**, **C.D. English**, E. Pop, "Record-High Mobility in Monolayer MoS_2 Devices Grown by Chemical Vapor Deposition," *SRC TECHCON*, Sep 2015, Austin TX
148. P. Pedrinazzi, L. Anzi, M. Fiocco, E. Guerriero, A. Mansouri, **A. Behnam**, **E.A. Carrion,** A. Pesquera, A. Centeno, A. Zurutuza, E. Pop, R. Sordan, "Ultra-low contact resistance in graphene devices," *Graphene Week*, Jun 2015, Manchester UK
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138. **S. Islam, A.Y. Serov,** I. Meric, J. Lee, D. Akinwande, K. Shepard, E. Pop, "Substrate Dependent High-Field Transport of Graphene Transistors," *SRC TECHCON*, Sep 2014, Austin TX
137. **C.D. English, V.E. Dorgan,** G. Shine, K.C. Saraswat, E. Pop, "Improving Contact Resistance in MoS_2 Field Effect Transistors," *SRC TECHCON*, Sep 2014, Austin TX **(Best Paper in Session Award)**
136. J.-W. Do, **D. Estrada,** X. Xie, N.N. Chang, J.L. Mallek, G.S. Girolami, J.A. Rogers, E. Pop, J.W. Lyding, "Self-Limiting and Selective Nanosoldering of Carbon Nanotube Junctions for Improved Device Performance," *International Conference on Nanoscience + Technology (ICN+T)*, July 2014, Vail CO

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131. **F. Lian, J.P. Llinas, Z. Li, D. Estrada,** E. Pop, "Thermal Transport in Chirality-Sorted Carbon Nanotube Networks," *MRS Spring Meeting*, Apr 2014, San Francisco CA
130. **A.Y. Serov, V.E. Dorgan, C.D. English,** E. Pop "High-Field Transport in MoS_2 Field-Effect Transistors," *MRS Spring Meeting*, Apr 2014, San Francisco CA
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96. P.K. Mohseni, **A. Behnam**, **J.D. Wood,** J.W. Lyding, E. Pop, and X. Li, "Van der Waals Epitaxy of Self-Organized $In_xGa_{1-x}As$/InAs Nanowire Heterostructures on Single Layer Graphene Substrates," *MRS Fall Meeting*, Nov 2012, Boston MA
95. **A.D. Liao, C.M. Neumann,** E. Pop, "Probing the Upper Limits of Current Density in One-Dimensional Carbon Interconnects," *MRS Fall Meeting*, Nov 2012, Boston MA
94. **K.L. Grosse,** X. Xie, **F. Xiong, M.-H. Bae**, **F. Lian, V.E. Dorgan,** J.A. Rogers, E. Pop, W.P. King, "Nanometer-scale Thermometry of Graphene, Carbon Nanotubes, and Phase Change Memory," *Intl. Mechanical Engineering Congress and Expo (IMECE)*, Nov 2012, Houston TX
93. M.P. Gupta, L. Chen, **D. Estrada**, **A. Behnam**, E. Pop, S. Kumar, "Impact of Network Morphology on Electrical Breakdown of Carbon Nanotube Thin-Film Transistors," *IMECE*, Nov 2012, Houston TX
92. **A.Y. Serov**, E. Pop, "High Field Transport and Velocity Saturation in Graphene Transistors," *SRC TECHCON* 2012, Sep 2012, Austin TX
91. J.-W. Do, **D. Estrada**, X. Xie, N. Chang, G. Girolami, J. Rogers, E. Pop, J. Lyding, "Nanosoldering Carbon Nanotube Junctions with Metal via Local Chemical Vapor Deposition for Improved Device Performance," *IEEE Nano*, Aug 2012, Birmingham UK
90. K.T. He, **J.D. Wood**, G.P. Doidge, E. Pop, J.W. Lyding, "Scanning Tunneling Microscopy Characterization of Graphene-Coated Few-layered Water on Mica," *IEEE Nano*, Aug 2012, Birmingham UK
89. **J.D. Wood**, S.W. Schmucker, R.T. Haasch, G.P. Doidge, G.L. Damhorst, **A.S. Lyons**, R. Bashir, E. Pop, J.W. Lyding, "Improved Graphene Growth and Fluorination on Cu with Clean Transfer to Surfaces," *IEEE Nano*, Aug 2012, Birmingham UK
88. J.C. Koepke, **J.D. Wood**, **D. Estrada**, **Z.-Y. Ong**, E. Pop, J.W. Lyding, "Atomic-Scale Study of Scattering and Electronic Properties of CVD Graphene Grain Boundaries," *IEEE Nano*, Aug 2012, Birmingham UK **(Geim and Novoselov Graphene Prize)**
87. **A.Y. Serov**, E. Pop, "Grain-Boundary Limited Thermal Transport in Graphene," *Phonons 2012*, Jul 2012, Ann Arbor, MI
86. **Z. Li**, **M.-H. Bae**, **P. Martin**, E. Pop, "Ballistic to Diffusive Crossover of Phonon Flow in Graphene Ribbons," *Phonons 2012*, Jul 2012, Ann Arbor, MI
85. **E. Carrion**, **A. Malik**, **A. Behnam**, **S. Islam**, **F. Xiong**, E. Pop, "Pulsed Nanosecond Characterization of Graphene Transistors," *IEEE Device Research Conference* (DRC), Jun 2012, State College PA
84. **F. Xiong**, **M.-H. Bae**, **Y. Dai**, **A.D. Liao**, **A. Behnam**, **E. Carrion**, **S. Hong**, D. Ielmini, E. Pop, "Nanowire Phase Change Memory with Carbon Nanotube Electrodes," *IEEE Device Research Conference* (DRC), Jun 2012, State College PA
83. **N. Wang**, **C.D. English**, E. Pop, "Comparison of Graphene Nanoribbons With Cu and Al Interconnects," *IEEE Device Research Conference* (DRC), Jun 2012, State College PA
82. **A.Y. Serov**, **Z.-Y. Ong**, **V.E. Dorgan**, Eric Pop, "Role of Screening, Heating, and Dielectrics on High-Field Transport in Graphene," *IEEE Device Research Conference* (DRC), Jun 2012, State College PA
81. **A. Behnam**, **A. Lyons**, **M.-H. Bae**, E.K. Chow, **S. Islam**, **C.M. Neumann**, E. Pop, "Graphene Nanoribbons from CVD Graphene," *MRS Spring Meeting*, Apr 2012, San Francisco CA
80. **M.-H. Bae**, **Z. Li**, P. Martin, **F. Lian**, E. Pop, "From Ballistic to Diffusive Thermal Transport in Graphene and Graphene Nanoribbons," *MRS Spring Meeting*, Apr 2012, San Francisco CA
79. **A. Behnam**, **D. Estrada**, V. Sangwan, X. Zhong, D. Jariwala, L. Lauhon, T.J. Marks, M.C. Hersam, E. Pop, "Performance Limits and Degradation of Carbon Nanotube Network Transistors," *MRS Spring Meeting*, Apr 2012, San Francisco CA
78. W. Ye, P.A.P. Martin, N. Kumar, **D. Estrada**, S.R. Daly, A.A. Rockett, J.R. Abelson, E. Pop, G.S. Girolami, J.W. Lyding, "Nanometalization of Single-Wall Carbon Nanotubes and Graphene Quantum Dots," *ACS (American Chemical Society) 243rd National Meeting*, Mar 2012, San Diego CA
77. **J.D. Wood**, S. Schmucker, G. Doidge, T. Krawczyk, **A.S. Lyons**, E. Pop, J.W. Lyding, "Crystallographic effects of copper substrate on graphene growth and fluorination," *APS March*

Meeting, Mar 2012, Boston MA

76. **A.D. Liao**, **C. Neumann**, E. Pop, "Fundamental Limits of Current Flow in One-dimensional Carbon Nanomaterials," *APS March Meeting*, Mar 2012, Boston MA
75. G. Doidge, **J.D. Wood**, E Pop, J.W. Lyding, "Confinement of organic solvents by wet transfer of graphene," *APS March Meeting*, Mar 2012, Boston MA
74. M.P. Gupta, **D. Estrada**, E. Pop, S. Kumar, "Impact of Contact Resistances on Electrical and Thermal Transport in Carbon Nanotube Network Transistors," *ASME Micro/Nanoscale Heat & Mass Transfer Intl. Conf.*, Mar 2012, Atlanta GA
73. V. Solovyeva, E. Chow, **M.-H. Bae**, **D. Estrada**, S. Banerjee, **A. Behnam**, **V.E. Dorgan**, W.J. Chang, E. Pop, R. Bashir, "New technique of DNA sensing: transverse nanoribbon electrodes," *Biophysical Society 56th Annual Meeting*, Feb 2012, San Diego CA
72. **J.D. Wood**, K.T. He, E. Pop, J.W. Lyding, "Scanning Tunneling Microscopy and Nanomanipulation of Graphene-Coated Water on Mica," *AVS Meeting* 2011, Oct 2011, Nashville TN
71. **A. Liao**, J. Wu, X. Wang, K. Tahy, D. Jena, H. Dai, E. Pop, "Thermally-Limited Current Carrying Ability of Graphene Nanoribbons," *SRC TECHCON*, Sep 2011, Austin TX
70. **F. Xiong**, **M.-H. Bae**, **A. Liao**, **Y. Dai**, E. Pop, "Phase-Change Memory Nanowires with Self-Aligned Carbon Nanotube Electrodes," *SRC TECHCON*, Sep 2011, Austin TX **(Best Paper in Session Award)**
69. **S. Islam**, **M.-H. Bae**, **V. Dorgan**, E. Pop, "Effect of Oxide Thickness Scaling on Self-Heating in Graphene Transistors," *IEEE Device Research Conference* (DRC), Jun 2011, Santa Barbara CA
68. **A. Lyons**, **A. Behnam**, E.K. Chow, E. Pop, "Transport Properties of CVD-Grown Graphene Nanoribbon Field-Effect Transistors," *IEEE Device Research Conference* (DRC), Jun 2011, Santa Barbara CA
67. M.Y. Timmermans, **D. Estrada**, A.G. Nasibulin, E. Pop, E.I. Kauppinen, "Optimizing Carbon Nanotube Network Morphology for Thin Film Transistors," *Nanotubes*-11 (NT11), Jul 2011, Cambridge, UK
66. **D. Estrada**, **C.-M. Chin**, **D. Ortigara**, E. Pop, "Dissipation and Breakdown in Carbon Nanotube Network Transistors," *Nanotubes* 2011 (NT11), Jul 2011, Cambridge, UK
65. **A. Liao**, J. Wu, X. Wang, K. Tahy, D. Jena, H. Dai, E. Pop, "Thermally-Limited Current Carrying Ability of Graphene Nanoribbons," *Graphene* 2011, Apr 2011, Bilbao, Spain
64. **A.S. Lyons**, E.K. Chow, **V.E. Dorgan**, E. Pop, "Large Scale CVD Graphene Nanoribbon Transistors with High-κ Dielectrics and Top Gates," *Graphene* 2011, Apr 2011, Bilbao, Spain
63. **J.D. Wood**, S.W. Schmucker, J.C. Koepke, **A.S. Lyons**, E. Pop, J.W. Lyding, "Effects of Polycrystalline Cu Substrate on Graphene Growth by Chemical Vapor Deposition," *Graphene* 2011, Apr 2011, Bilbao, Spain
62. J. Koepke, **J.D. Wood**, **D. Estrada**, E. Pop, J.W. Lyding, "Atomic Scale Electronic Characterization of Grain Boundaries in Graphene Grown by Chemical Vapor Deposition on Copper Foil," *Graphene* 2011, Apr 2011, Bilbao, Spain
61. **J.D. Wood**, S.W. Schmucker, **A.S. Lyons**, E. Pop, J.W. Lyding, "Copper Crystallographic Dependence for Graphene Grown by Chemical Vapor Deposition," *MRS Spring Mtg.*, Apr 2011, San Francisco CA
60. **F. Xiong**, **M.-H. Bae**, **A. Liao**, **Y. Dai**, E. Pop, "GST Nanowires with Self-aligned Carbon Nanotube Electrodes," *MRS Spring Meeting*, Apr 2011, San Francisco CA
59. **J. Wood**, S. Sivapalan, **V. Dorgan**, C. Murphy, E. Pop, J.W. Lyding, "Aligned, ultra-long graphene nanoribbon network fabrication by nanowire etch masks," *APS March Meeting*, Mar 2011, Dallas TX
58. **Z.-Y. Ong**, E. Pop, "Surprising Effects of Substrate on Thermal Transport in Supported Graphene," *APS March Meeting*, Mar 2011, Dallas TX
57. J. Koepke, **D. Estrada**, **J. Wood**, E. Pop, J. Lyding, "Scanning Tunneling Microscopy Study of Grain Boundaries in Graphene Grown by Chemical Vapor Deposition on Copper Foil," *APS March Meeting*, Mar 2011, Dallas TX

56. **F. Xiong**, **A. Liao**, **M.-H. Bae**, **D. Estrada**, E. Pop, "Integrating Carbon-Based Nanoelectronics with Chalcogenide Phase Change Memory," *IEEE EDSSC*, Dec 2010, Hong Kong
55. **K. Grosse**, **M.-H. Bae**, **F. Lian**, E. Pop, W.P. King, "Current Crowding, Joule Heating, and Peltier Cooling at Graphene Device Contacts," *MRS Fall Meeting*, Nov 2010, Boston MA
54. M. Rudan, F. Giovanardi, **T. Tsafack**, **F. Xiong**, E. Piccinini, F. Buscemi, **A. Liao**, E. Pop, R. Brunetti, C. Jacoboni, "Modeling of the Voltage Snap-Back in Amorphous-GST Memory Devices," *SISPAD*, Sep 2010, Bologna Italy
53. **V. Dorgan**, *M.-H. Bae*, E. Pop, "Mobility and Velocity-Field Relationship in Graphene above Room Temperature," *SRC TECHCON*, Sep 2010, Austin TX
52. **A. Liao**, R. Alizadegan, **S. Dutta**, **Z.-Y. Ong**, K. J. Hsia, E. Pop, "Thermal Dissipation, Reliability, and Breakdown of Single-Wall Carbon Nanotubes," *SRC TECHCON*, Sep 2010, Austin TX
51. **D. Estrada**, **S. Dutta**, **A. Liao**, E. Pop, "Pulsed characterization for hysteresis-free carbon nanotube mobility measurements," *Nanotubes 2010* (*NT10*), June 2010, Montreal, Canada
50. **J. D. Wood**, V. Nazareth, J. W. Lyding, E. Pop, "Wafer-Scale Carbon Nanotube Alignment and Interaction on Hydrophobic and Hydrophilic Surfaces," *Nanotubes 2010* (*NT10*), Montreal Canada
49. **F. Xiong**, **A. Liao**, **D. Estrada**, E. Pop, "Ultra-Low Power Phase Change Memory with Carbon Nanotube Interconnects," *IEEE Device Research Conference (DRC)*, June 2010, Notre Dame IN
48. **V. Dorgan**, **M.-H. Bae**, E. Pop, "Mobility and Velocity-Field Relationship in Graphene," *IEEE Device Research Conference (DRC)*, June 2010, Notre Dame IN
47. **S. Dutta**, **S. Prakash**, **D. Estrada**, E. Pop, "A Web Service and Interface for Electronic Device Characterization," *American Society of Engineering Education (ASEE) Annual Conference & Expo*, June 2010, Louisville KY
46. **V. Dorgan**, **M.-H. Bae**, E. Pop, "Mobility and High-Field Velocity Saturation in Graphene," *6th Intl. Nanotechnology Conference on Communication & Cooperation* (*INC6*), May 2010, Grenoble, France
45. Y. K. Koh, **M.-H. Bae**, E. Pop, D. G. Cahill, "Thermal Conductance of Monolayer and Few-Layer Graphenes," *MRS Spring Meeting*, Apr 2010, San Francisco CA
44. **A. Liao**, **S. Dutta**, **Z.-Y. Ong**, E. Pop, "Joule Breakdown and Thermal Dissipation of Carbon Nanotubes with SiO_2 Substrates," *MRS Spring Meeting*, Apr 2010, San Francisco CA
43. **M.-H. Bae**, **Z.-Y. Ong**, **D. Estrada**, E. Pop, "Infrared imaging of power dissipation in graphene field effect transistors," *APS March Meeting*, Mar 2010, Portland OR
42. **Z.-Y. Ong** and E. Pop, "Molecular dynamics simulation of carbon nanotube to SiO_2 heat dissipation," *APS March Meeting*, Mar 2010, Portland OR
41. C. Richter, O. Jurchescu, X. Liang, D. Gundlach, **A. Liao**, E. Pop, "Noise in single-wall carbon nanotubes under high electric field stress," *APS March Meeting*, Mar 2010, Portland OR
40. **D. Estrada, A. San Miguel**, **R. Pecora**, E. Pop, "Tailored ON/OFF ratio of nanotube network transistors by pulsed breakdown," *IEEE Intl. Semic. Device Research Symposium* (*ISDRS*), Univ. Maryland, College Park MD, Dec 2009
39. **F. Xiong**, **A. Liao**, E. Pop, "Ultra-Low Current Phase-Change Antifuse with Carbon Nanotube Electrodes," *IEEE Non-Volatile Memory Technology Symposium (NVMTS)*, Oct 2009, Portland OR
38. E. Pop, **M.-H. Bae**, **D. Estrada**, **A. Liao**, **Z.-Y. Ong**, **F. Xiong**, "Energy Efficiency in Nanoscale Electronic Devices," *NANO-DDS*, Oct 2009, Ft Lauderdale FL
37. **Z.-Y. Ong** and E. Pop, "Molecular Dynamics Simulation of Thermal Boundary Resistance Between Carbon Nanotubes and SiO_2," *SRC TECHCON*, Sep 2009, Austin TX
36. **A. Liao**, **F. Xiong**, K. Darmawikarta, J. Abelson, E. Pop, "Chalcogenide Phase Change Induced with Single-Wall Carbon Nanotube Heaters," *SRC TECHCON*, Sep 2009, Austin TX
35. **P. Martin**, **Z. Aksamija**, E. Pop, U. Ravaioli, "Prediction of Reduced Thermal Conductivity in Nano-Engineered Rough Semiconductor Nanowires," *EDISON 16*, Aug 2009, Montpellier France
34. **M.-H. Bae**, **Z.-Y. Ong**, **D. Estrada**, E. Pop, "Infrared Microscopy of Joule Heating in Graphene Field

Effect Transistors," *IEEE Nano*, July 2009, Genoa Italy

33. **B. Ramasubramanian** and E. Pop, "Comparison of Energy Relaxation in One-Dimensional Thermionic and Tunneling Transistors," *IEEE Nano*, July 2009, Genoa Italy
32. **D. Estrada**, **S. Dutta**, **A. Liao**, E. Pop, "Reduction of Hysteresis in Mobility Measurements of Carbon Nanotube Transistors by Pulsed Characterization," *IEEE Device Research Conference* (*DRC*), Jun 2009, State College PA
31. **A. Liao**, **F. Xiong**, K. Darmawikarta, J. Abelson, E. Pop, "Chalcogenide Phase Change Induced with Single-Wall Carbon Nanotube Heaters," *IEEE Device Research Conference* (*DRC*), Jun 2009, State College PA
30. **Z.-Y. Ong** and E. Pop, "Molecular dynamics simulation of interfacial thermal resistance between a (10,10) carbon nanotube and SiO_2," *MRS Spring Mtg.*, Apr 2009, San Francisco CA
29. **I. Chen** and E. Pop, "Compact Thermal Model for Segmented Nanowire Phase Change Memory Cell," *MRS Spring Mtg.*, Apr 2009, San Francisco CA
28. K. Darmawikarta, B. Lee, S. Raoux, **A. Liao**, E. Pop, S. Bishop, J. Abelson, "Analysis of Nanoscale Transformation of Phase Change Materials," *MRS Spring Mtg.*, Apr 2009, San Francisco CA
27. **Z.-Y. Ong**, E. Pop, "A Two-Temperature Model of Narrow-Body Silicon Transistors under Steady State and Transient Operation," *ASME 3rd Energy Nanotech. Conf. (ENIC)*, Jacksonville FL, Aug 2008
26. **A. Liao**, E. Pop, "Impact Ionization in Semiconducting Single Wall Carbon Nanotubes," *IEEE Device Research Conference (DRC)*, Santa Barbara CA, Jun 2008
25. E. Pop, "Role of Electrical and Thermal Contact Resistance in the High-Bias Joule Breakdown of Single-Wall Carbon Nanotube Devices," *IEEE Device Research Conf.* (*DRC*), Jun 2007, Notre Dame IN
24. S. Verma, E. Pop, P. Kapur, P. Majhi, K. Parat, K. Saraswat, "Feasibility Study of Composite Dielectric Tunnel Barriers for Flash Memory," *IEEE Device Research Conf.* (*DRC*), Jun 2007, Notre Dame IN
23. E. Pop, "Heat Generation and Transport in SOI and GOI Devices," *211th Electrochemical Society (ECS) Meeting*, SOI Symposium, May 2007, Chicago IL
22. D. Mann, Y. K. Kato, E. Pop and H. Dai, "Electro-thermal Light Emission in Individual Metallic Single-walled Carbon Nanotubes," *MRS Spring Meeting*, Apr 2007, San Francisco CA
21. J. Reifenberg, S. Kim, Y. Zhang, E. Pop, H.-S. P. Wong, K. Goodson, "Phase Transitions and Thermal Properties of GeSbTe," *MRS Spring Meeting*, Apr 2007, San Francisco CA
20. Y. K. Kato, D. Mann, A. Kinkhabwala, E. Pop, J. Cao, X. Wang, L. Zhang, Q. Wang, J. Guo and H. Dai, "Electrically driven thermal light emission from individual single-walled carbon nanotubes," *APS March Meeting*, Mar 2007, Denver CO
19. J. Reifenberg, E. Pop, A. Gibby, S. Wong and K. Goodson, "Multiphysics Modeling and Impact of Thermal Boundary Resistance in Phase Change Memory Devices," *ITHERM*, May 2006, San Diego CA
18. M. Panzer, G. Zhang, D. Mann, X. Hu, E. Pop, H. Dai, K. Goodson, "Thermal Properties of Metal-Coated Vertically-Aligned Single Wall Nanotube Films," *ITHERM*, p. 1306, May 2006, San Diego, CA
17. D. Mann, E. Pop, H. Dai, "Hot Phonons in Suspended Carbon Nanotubes," *Electrochemical Society* (*ECS*) 209th Meeting, May 2006, Denver CO
16. D. Mann, E. Pop, J. Cao, H. Dai, "Self-Heating and Non-Equilibrium Optical Phonons in Suspended Carbon Nanotubes," *APS March 2006 Meeting*, Baltimore, MD
15. E. Pop, D. Mann, J. Reifenberg, K. Goodson and H. Dai, "Electro-Thermal Transport in Metallic Single-Wall Carbon Nanotubes for Interconnect Applications," *IEEE Intl. Electron Devices Meeting (IEDM)*, pp. 253-256, Dec. 2005, Washington, DC
14. J. Rowlette, E. Pop, S. Sinha, M. Panzer and K. Goodson, "Thermal Phenomena in Deeply Scaled MOSFETs," *IEEE Intl. Electron Devices Meeting (IEDM)*, pp. 984-987, Dec. 2005, Washington, DC
13. J. Rowlette, E. Pop, S. Sinha, M. Panzer and K. Goodson, "Thermal Simulation Techniques for Nano-Transistors," *IEEE-ACM ICCAD*, pp. 225-228, Nov. 2005, San Jose CA

12. J. Rowlette, E. Pop, S. Sinha, R. Dutton and K. Goodson, "Coupled Electron-Phonon Transport in Nanometer-Scale Silicon Devices," *SRC TECHCON*, Oct. 2005, Portland OR
11. E. Pop, J. Rowlette, R. Dutton and K. Goodson, "Joule Heating under Quasi-Ballistic Transport Conditions in Bulk and Strained Silicon Devices," *SISPAD*, p. 307-310, Sep. 2005, Tokyo Japan
10. E. Pop, C. O. Chui, S. Sinha, R. Dutton, K. Goodson, "Electro-Thermal Comparison and Performance Optimization of Thin-Body SOI and GOI MOSFETs," *IEEE Intl. Electron Devices Meeting (IEDM)*, pp. 411-414, Dec. 2004, San Francisco, CA
9. S. Sinha, E. Pop, K. Goodson, "A Split-Flux Model for Phonon Transport Near Hotspots," *ASME Intl. Mechanical Engineering Congress and Expo (IMECE)*, Nov. 2004, Anaheim, CA
8. E. Pop, K. Goodson, R. Dutton, "Thermal Analysis of Ultra-Thin Body Device Scaling," *IEEE Intl. Electron Devices Meeting (IEDM)*, pp. 883-886, Dec. 2003, Washington DC
7. E. Pop, K. Goodson, R. Dutton, "Detailed Heat Generation Simulations via the Monte Carlo Method," *SISPAD*, pp. 121-124, Sep. 2003, Boston MA
6. E. Pop, K. Goodson, R. Dutton, "Monte Carlo Simulation of Heat Generation in Silicon Nano-Devices," *SRC TECHCON*, Aug. 2003, Dallas TX **(Best Paper in Session Award)**
5. E. Pop, S. Sinha, K. Goodson, "Monte Carlo Modeling of Heat Generation in Electronic Nanostructures," *ASME Intl. Mech. Eng. Congress and Expo (IMECE)*, Nov. 2002, New Orleans, LA
4. E. Pop, "Heat Generation in Three- and Two-Dimensional Nanostructures," *SRC TECHCON*, Sep. 2002, Dallas, TX **(Outstanding Research Presentation Award)**
3. E. Pop, K. Banerjee, P. Sverdrup, R. Dutton, K. Goodson, "Localized Heating Effects and Scaling of Sub-0.18 Micron CMOS Devices", *IEEE Intl. Electron Dev. Mtg. (IEDM)*, p. 677, Dec. 2001, Washington DC
2. P. Sverdrup, S. Sinha, E. Pop, O. Tornblad, R. Dutton, K. Goodson. "Advanced Electro-Thermal Modeling and Simulation Techniques for Deep Sub-Micron Devices," *SRC TECHCON*, Sep. 2000, Phoenix AZ
1. J. Slinkman, E. Pop, W. Clark, "Temperature Dependence of Subthreshold Current in Submicron Metal-Oxide-Silicon Field Effect Transistors," *APS March Meeting*, Mar 1998, Los Angeles CA

Invited Presentations (plenaries, keynotes, tutorials and awards in bold)

272. INFOS 2025 (24th Biannual Conference on Insulating Films on Semiconductors), Granada, Jun 2025
271. IEEE Device Research Conference, Keynote, Durham NC, Jun 2025
270. VLSI-TSA Symposium, Hsinchu Taiwan, Apr 2025
269. MRS Spring Meeting (Symposium EL03), Seattle WA, Apr 2025
268. MRS Spring Meeting (Symposium SF01), Seattle WA, Apr 2025
267. SEMI Workshop (Future of Computing), Milpitas CA, Mar 2025
266. Future of Computing Symposium, USC, Los Angeles CA, Mar 2025
265. Columbia University, Applied Physics and Materials Science Seminar, New York NY, Feb 2025
264. Univ. Chicago Colloquium, Chicago IL, Feb 2025
263. Argonne National Lab, Microelectronics Colloquium, Lemont IL, Feb 2025
262. University of Strasbourg, France, Virtual Seminar, Feb 2025
261. SLAC/SSRL Virtual Workshop, Menlo Park CA, Feb 2025
260. Future of Everything (podcast), Stanford CA, Jan 2025
259. NRO-Air Force Seminar, online, Jan 2025
258. MRS Fall Meeting (Symposium EL03), Boston MA, Nov 2024
257. SEMI Workshop (Future of Computing), Milpitas CA, Oct 2024
256. IRDS (Intl. Roadmap Devices & Systems) Workshop, Sep 2024
255. Stanford Applied Physics Faculty Retreat, Half Moon Bay, Sep 2024

254. Univ. Notre Dame Seminar, South Bend IN, Sep 2024
253. ST Microelectronics Seminar, Agrate Italy, Jul 2024
252. Politecnico di Milano, Dipt. Elettronica Informazione e Bioingegneria (DEIB), Milan Italy, Jul 2024
251. IEEE IITC (Intl. Interconnect Technology Conference), San Jose CA, Jun 2024
250. ECS Meeting "Nano for Industry" Symposium, San Francisco CA, May 2024
249. 2D Transition Metal Dichalcogenides 2024, Hong Kong, May 2024
248. UC Santa Cruz, Physics Colloquium, Santa Cruz CA, May 2024
247. Holonyak Micro & Nanotechnology Lab (HMNTL) Seminar, Univ. Illinois, Urbana IL, May 2024
246. MRS Spring Meeting (Symposium EL05), Seattle WA, Apr 2024
245. UC San Diego Mechanical Engineering Seminar, UCSD, San Diego CA, Apr 2024
244. Applied Materials (AMAT) Seminar, Santa Clara CA, Feb 2024
243. AKM Newaz Symposium, SF State Univ. San Francisco CA, Jan 2024
242. MRS Fall Meeting (Symposium EL09), Boston MA, Nov 2023
241. MRS Fall Meeting (Symposium EL07), Boston MA, Nov 2023
240. AVS (American Vacuum Society) 69th Intl. Symposium & Exhibition, Portland OR, Nov 2023
239. Corning West Technology Center Klatch Talk, Sunnyvale CA, Nov 2023
238. IEEE NMDC (Nanotechnology Materials & Devices Conf.), Paestum Italy, Oct 2023
237. California-US Government (CA-USG) Workshop on 2D Materials, Irvine CA, Sep 2023
236. Texas Materials Institute Seminar, UT Austin, Austin TX, Sep 2023
235. Purdue Viskanta Fellowship Tutorial, West Lafayette IN, Aug 2023
234. Purdue Viskanta Fellowship Seminar, West Lafayette IN, Aug 2023
233. IEEE Electron Devices Society Santa Clara Valley/San Francisco Seminar, Jul 2023
232. Samsung SAIT Invited Seminar, Suwon Korea, Jul 2023
231. AEFM (Adv. Epitaxy for Freestanding Membranes and 2D Materials), Seoul Korea, Jul 2023
230. 2D Transition Metal Dichalcogenides 2023, Cambridge UK, Jun 2023
229. MRS Spring Meeting (Symposium EL01), San Francisco CA, Apr 2023
228. APS Fellow FIAP Awards, Las Vegas NV, Mar 2023
227. NVMTS (Non-Volatile Memory Technology Symposium), Stanford CA, Dec 2022
226. MRS Fall Meeting (Symposium EQ10), Boston MA, Nov 2022
225. MRS Fall Meeting (Symposium EQ04), Boston MA, Nov 2022
224. RPGR2022 (Recent Progress of Graphene and 2D Materials Research), Taipei Taiwan, Nov 2022
223. SJSU Interdisciplinary Engineering Seminar, San Jose CA, Nov 2022
222. IEEE ICSICT (Intl. Conf. Solid-State and Integrated Circuit Tech.), Nanjing China, Oct 2022
221. E\PCOS (European Phase-Change and Ovonics Symposium), Oxford, England, Sep 2022
220. Samsung Global Research Symposium (GRS), Napa CA, Aug 2022
219. Telluride Science Research Center, Thermal Transport at the Nanoscale, Telluride CO, Jun 2022
218. SystemX Faculty Tutorial, Stanford CA, May 2022
217. SystemX Spring Workshop, Stanford CA, May 2022
216. MRS Spring Meeting (Symposium SF15), Honolulu HI, May 2022
215. VLSI-TSA Symposium, Hsinchu Taiwan, Apr 2022
214. UCLA ECE Department Seminar, Apr 2022
213. Duke ECE Department Seminar, Apr 2022
212. Stanford Interdisciplinary Graduate Fellows (SIGFs) guest speaker, Stanford CA, Feb 2022
211. Future Chips 2021, The 6th Future Chips Forum, Tsinghua University, Dec 2021
210. Virtual Graphene 2021 Keynote, Grenoble France, Nov 2021

209. ICN2 NanoSeminar in Physics, Oct 2021
208. IIRW (Intl. Integrated Reliability Workshop) Tutorial, Oct 2021
207. MITRE Corp. Smart Materials and Intelligent Systems (SMIS) Seminar, Oct 2021
206. Univ. Michigan MSE Department Seminar, Sep 2021
205. Stanford eWEAR Symposium (with A. Daus), Sep 2021
204. National Research Council of Canada (NRC-CNRC), Aug 2021
203. 3rd International Memory Symposium, Hong Kong, May 2021
202. CarbOnlineHagen Keynote, Copenhagen Denmark, Apr 2021, http://www.carbonhagen.com
201. Wayne State Physics Seminar (via Zoom), Oct 2020
200. SSDM (Intl. Conference on Solid State Devices & Materials), Tokyo Japan (via Zoom), Sep 2020
199. Micron Summer Intern Seminar (via Zoom), Jun 2020
198. Yonsei University Seminar, Seoul Korea, Feb 2020
197. Samsung Seminar, Seoul Korea, Feb 2020
196. SK Hynix Seminar, Seoul Korea, Feb 2020
195. Nano-KISS (Korean Intl. Summer School on Nanoelectronics), KCS, Korea, Feb 2020
194. Micron Seminar, Boise, ID, Feb 2020
193. Boise State Materials Research Seminar, Boise, ID, Feb 2020
192. "How to Prepare for the Academic Interview," Stanford BEAM (Career Services) Seminar, Stanford CA, Jan 2020
191. UC Berkeley, Berkeley CA, Dec 2019
190. WINDS (Workshop on Innovative Nanoscale Devices and Systems), Waimea HI, Dec 2019
189. Duke University, Durham NC, Oct 2019
188. IEEE NVMTS (Non-Volatile Memory Technology Symposium), Durham NC, Oct 2019
187. IMEC Memory Workshop, Leuven Belgium, Oct 2019
186. Apple Seminar, Cupertino CA, Oct 2019
185. SLAC SSRL/LCLS Users' Meeting, Sep 2019
184. "2D Materials: From Fundamentals to Spintronics" Workshop, Natal Brazil, Sep 2019
183. Peking University, Beijing China, Sep 2019
182. Tsinghua University, Beijing China, Sep 2019
181. Beijing Information Science & Technology University (BISTU), Beijing China, Sep 2019
180. IEEE DRC (Device Research Conference) Rump Session, Ann Arbor, MI, Jun 2019
179. IEEE SNW (Silicon Nanoelectronics Workshop), Kyoto Japan, Jun 2019
178. IEEE VLSI Symposium Workshop on 2D Materials & Applications, Kyoto Japan, Jun 2019
177. US-EU Workshop on 2D Layered Materials and Devices, State College PA, May 2019
176. "Let's Have an Awesome Time Doing Science" (LHAATDS) Workshop, Stanford CA, May 2019
175. Micron Seminar, Boise ID, Apr 2019
174. IEEE WMED (Workshop on Microelectronics & Electron Devices), Boise ID, Apr 2019
173. MRS Spring Meeting (Symposium QN03), Phoenix AZ, Apr 2019
172. MRS Spring Meeting (Symposium EP08), Phoenix AZ, Apr 2019
171. MIT MTL Seminar, Cambridge MA, Mar 2019
170. APS (American Physical Society) March Meeting, Boston MA, Mar 2019
169. UIUC MNTL Seminar, Urbana IL, Feb 2019
168. Stanford GLAM Condensed Matter Seminar, Stanford CA, Feb 2019
167. Apple Seminar, Cupertino CA, Jan 2019
166. Applied Materials (AMAT) Seminar, Santa Clara CA, Jan 2019

165. Eurotherm Nanoscale & Microscale Heat Transfer VI (NMHT), Levi, Finland, Dec 2018
164. Stanford BEAM (Career Services) Future Faculty Seminar, Stanford CA, Oct 2018
163. AVS (American Vacuum Society) 65th Intl. Symposium & Exhibition, Long Beach CA, Oct 2018
162. IEEE NMDC (Nanotechnology Materials & Devices Conf.), Portland OR, Oct 2018
161. E\PCOS (European Phase-Change and Ovonics Symposium), Catania, Italy, Sep 2018
160. CEA-LETI Seminar, Grenoble France, Sep 2018
159. Graphene Week, San Sebastian Spain, Sep 2018
158. SSDM (Intl. Conference on Solid State Devices & Materials), Tokyo Japan, Sep 2018
157. Graphene 2018 Keynote, Dresden Germany, Jun 2018
156. Lawrence Symposium, Arizona State Univ., Phoenix AZ, Feb 2018
155. Rising Stars Workshop, Stanford CA, Nov 2017
154. Stanford BEAM (Career Services) Future Faculty Seminar, Stanford CA, Oct 2017
153. US-EU Workshop on 2D Layered Materials and Devices, Arlington VA, Oct 2017
152. MIT S3TEC Seminar, Cambridge MA, Sep 2017
151. Micron Seminar, Boise ID, Sep 2017
150. Lund University Colloquium, Lund Sweden, Aug 2017
149. Carbonhagen Keynote (8th Symposium on 2D Materials), Copenhagen, Aug 2017
148. IEEE NANO, Pittsburgh PA, Jul 2017
147. EDISON 20 Keynote (Intl. Conf. Electron Dynamics Semic., Opto., Nano.), Buffalo NY, Jul 2017
146. Western Digital, San Jose CA, Jun 2017
145. IEEE DRC (Device Research Conf.), Phase-Change Memory tutorial, Notre Dame IN, Jun 2017
144. "Nanoscale Energy, Thermal & Thermoelectric Effects" short course, Univ. Pisa, Italy, Jun 2017
143. UT Austin, NASCENT Colloquium, Austin TX, May 2017
142. IEEE ICICDT (Intl. Conf. IC Design & Tech.), Austin TX, May 2017
141. UC Santa Cruz, EE Colloquium, Santa Cruz CA, Apr 2017
140. MRS Spring Meeting (Symposium NM2), Phoenix AZ, Apr 2017
139. MRS Spring Meeting (Symposium NM1), Phoenix AZ, Apr 2017
138. 2nd Intl. Symposium on Science & Technology of 2D Materials, Orlando FL, Feb 2017
137. Northrop Grumman NG Next Workshop, Redondo Beach CA, Jan 2017
136. Monash Univ., Melbourne Australia, Jan 2017
135. IEEE IEDM (Intl. Electron Devices Meeting), San Francisco CA, Dec 2016
134. Stanford BEAM (Career Services) Future Faculty Seminar, Stanford CA, Oct 2016
133. 2Dfun (2D Functional MX2-Graphene Heterostructures) Workshop, IMEC, Leuven Belgium, Oct 2016
132. EU-US Workshop on 2D Layered Materials and Devices, Manchester UK, Oct 2016
131. IEEE SFBA Nanotechnology Council, Santa Clara CA, Sep 2016
130. CEA-LETI Seminar, Grenoble France, Sep 2016
129. STW (Steep Transistor Workshop), Lausanne Switzerland, Sep 2016
128. StarNET LEAST & SONIC Beyond CMOS Circuits & Systems Workshop, Notre Dame IN, Aug 2016
127. TSMC R&D Technical Forum, Jul 2016
126. IEEE Electron Devices Society (EDS) Santa Clara Valley Chapter, Santa Clara CA, Jul 2016
125. InterPACK Workshop on IOT Packaging, Santa Clara CA, Jun 2016
124. Univ. Minnesota 2D Summer School, Minneapolis MN, Jun 2016
123. E-MRS (European Materials Research Society) Spring Meeting, Lille, France, May 2016
122. ON Semiconductor, Phoenix, AZ, Mar 2016
121. MRS Spring Meeting, Phoenix AZ, Mar 2016

120. SPIE Photonics West, San Francisco CA, Feb 2016
119. DARPA MTO Unplugged Offsite Meeting, Warrensburg VA, Jan 2016
118. Samsung R&D Future Technology Seminar, Hwaseong, Korea, Oct 2015
117. Nano-KISS (Korean Intl. Summer School on Nanoelectronics), ETRI, Daejeon Korea, Oct 2015
116. IEEE NMDC (Nanotechnology Materials and Devices Conference), Anchorage AK, Sep 2015
115. Intl. Materials Research Congress (MRS-IMRC), Cancun Mexico, Aug 2015
114. IEEE NANO, Rome Italy, Jul 2015
113. USC, MHI Distinguished Speaker Series, Los Angeles CA, Jun 2015
112. MRS Spring Meeting, San Francisco CA, Apr 2015
111. US-EU Workshop on 2D Layered Materials and Devices, Arlington VA, Apr 2015
110. SystemX Alliance Seminar, Stanford CA, Apr 2015
109. NanoTechnology for Defense Conference (NT4D) 2D devices tutorial, Chantilly VA, Nov 2014
108. AVS (American Vacuum Society), Baltimore MD, Nov 2014
107. "Thermoelectrics 101," GCEP Symposium, Stanford CA, Oct 2014
106. ESSDERC (European Solid-State Device Conference) plenary talk, Venice Italy, Sep 2014
105. Army Research Lab (ARL) 2D Technology Applications Meeting, Adelphi MD, Aug 2014
104. Tsukuba Nanotechnology Symposium 2014 (TNS'14), Tsukuba Japan, Jul 2014
103. US-Japan Joint Seminar on Nanoscale Transport Phenomena, Santa Cruz CA, Jul 2014
102. Lockheed-Martin Space Systems Company (LMCO), Palo Alto CA, Jun 2014
101. Japan-America Frontiers of Engineering Symposium (JAFOE), Tokyo Japan, Jun 2014
100. SPIE DSS (Defense, Security, Sensing), Baltimore MD, May 2014
99. Micron Seminar, Boise ID, May 2014
98. Boise State University (BSU) Colloquium, Boise ID, May 2014
97. Applied Materials (AMAT) Seminar, Santa Clara CA, Jan 2014
96. Sandia Labs "Beyond Moore Workshop," Albuquerque NM, Jan 2014
95. DARPA DSRC (Defense Sciences Research Council), Arlington VA, Jan 2014
94. ISDRS (Intl. Semiconductor Device Research Symposium), Bethesda MD, Dec 2013
93. IEEE IEDM (Intl. Electron Devices Meeting), Washington DC, Dec 2013
92. Stanford MSE (Materials Science and Engineering) Colloquium, Stanford CA, Nov 2013
91. SLAC (Stanford Linear Accelerator Center) SIMES Seminar, Palo Alto CA, Oct 2013
90. UC Berkeley Nanoscience and Nanoengineering Institute (BNNI) Seminar, Oct 2013
89. NRL (Naval Research Lab), Alexandria VA, Oct 2013
88. Stanford Precourt Institute for Energy (PIE) Energy Seminar, Stanford CA, Sep 2013
87. EMS (Electronic Materials Symposium), Santa Clara CA, Sep 2013
86. Univ. Erlangen Colloquium, Erlangen Germany, Sep 2013
85. E\PCOS (European Phase-Change and Ovonics Symposium), Berlin, Germany, Sep 2013
84. PTES (First International Conference on Phononics and Thermal Energy Science), Shanghai, China, Sep 2013
83. IWCE (Intl. Workshop Computational Electronics), Nara, Japan, Jun 2013
82. Keio University EE Seminar, Tokyo, Japan, Jun 2013
81. Univ. Tokyo ME Seminar, Tokyo, Japan, Jun 2013
80. HGST (Hitachi Global Storage Technologies) seminar, San Jose CA, May 2013
79. Stanford Energy & Environment Affiliates Program (EEAP), Stanford CA, May 2013
78. UT Austin, Nanoscale Thermal Energy Symposium, Austin TX, May 2013
77. Intel Corp., memory seminar, Santa Clara CA, Apr 2013

76. MRS Spring Meeting, San Francisco CA, Apr 2013
75. Univ. Minnesota, Mechanical Engineering Colloquium, Minneapolis MN, Mar 2013
74. Beckman Institute Director's Seminar, Univ. Illinois Urbana-Champaign, Urbana IL, Jan 2013
73. MRS Fall Meeting, Boston MA, Nov 2012
72. IEEE Nanotechnology Materials and Devices Conf. (IEEE-NMDC), Honolulu HI, Oct 2012
71. Wright-Patterson Air Force Research Labs (AFRL), Dayton OH, Oct 2012
70. Intl. Materials Research Congress (MRS-IMRC), Cancun Mexico, Aug 2012
69. CMOS Emerging Technologies (ET) Conference, Vancouver BC, Canada, Jul 2012
68. Silicon Nanoelectronics Workshop (IEEE-SNW), Honolulu HI, June 2012
67. IEEE Intl. Conference on IC Design and Technology (IEEE-ICICDT), Austin TX, May 2012
66. UT Dallas, Materials Science & Engineering Seminar, Dallas TX, May 2012
65. U. Washington, Center for Nanotechnology Seminar, Seattle WA, Apr 2012
64. MRS Spring Meeting, San Francisco CA, Apr 2012
63. MIT, EECS Seminar, Cambridge MA, Apr 2012
62. Georgia Tech, MRSEC Seminar Series, Atlanta GA, Mar 2012
61. TU Delft, Quantum Nanoscience Seminar, Netherlands, Mar 2012
60. **"The Device-to-System Spectrum – A Tutorial on IC Design with Nanomaterials," co-taught tutorial at *Design, Automation & Test in Europe (DATE)*, Dresden, Germany, Mar 2012**
59. Stanford, Electrical Engineering seminar, Stanford CA, Feb 2012
58. Cornell, joint Physics and EE seminar, Ithaca NY, Feb 2012
57. RPI, joint Materials Science and Mechanical Engineering Colloquium, Troy NY, Feb 2012
56. Stanford, Materials Science & Engineering Colloquium, Stanford CA, Nov 2011
55. Purdue, Electrical & Computer Engineering Colloquium, West Lafayette IN, Nov 2011
54. Univ. Missouri, Dept. Physics O.M. Stewart Colloquium, Columbia MO, Oct 2011
53. UIUC Condensed Matter Physics Colloquium, Urbana IL, Oct 2011
52. Politecnico di Milano, Milano Italy, Sep 2011
51. Micron and STMicroelectronics, Agrate Italy, Sep 2011
50. E\PCOS, Zurich Switzerland, Sep 2011 **(Outstanding Oral Presentation Award)**
49. NANO-DDS, Brooklyn NY, Aug 2011
48. Nanotubes 2011, Graphene Satellite Workshop, Cambridge UK, July 2011
47. Albany Nanotechnology Center (IBM and Global Foundries), Albany NY, July 2011
46. DARPA DSRC (Defense Sciences Research Council), Norfolk VA, June 2011
45. CalTech, Applied Physics Colloquium, Pasadena CA, May 2011
44. MIT, Mechanical Eng. Seminar, Cambridge MA, May 2011
43. FET11 Conference, Micro-Energy ICT Panel, Budapest, Hungary, May 2011
42. UC Berkeley, EECS Seminar, Berkeley CA, April 2011
41. APS March 2011 Meeting, Dallas TX, Mar 2011
40. MRS Fall 2010 Meeting, Boston MA, Nov 2010
39. D. Estrada and E. Pop, Argonne National Labs, Argonne IL, Oct 2010
38. Washington U., Applied Physics Seminar, St. Louis MO, Oct 2010
37. Carbon Electronics Workshop, SUNY Albany, Sep 2010
36. SRC Compact Modeling Workshop, Berkeley CA, Aug 2010
35. Wright-Patterson Air Force Research Labs (AFRL), Dayton OH, July 2010
34. TIENCS Workshop, Natl. Univ. Singapore (NUS), Singapore, July 2010
33. UGIM Symposium, Purdue University, West Lafayette IN, June 2010

32. Univ. Wisconsin, Madison WI, Apr 2010
31. M.-H. Bae, Z.-Y. Ong, D. Estrada, E. Pop, ECS Meeting, Vancouver BC, Canada, Apr 2010
30. ECS Meeting, Vancouver BC, Canada, Apr 2010
29. **"Carbon Nanoelectronics: Towards Energy-Efficient Computing," invited tutorial at *Design, Automation & Test in Europe* (*DATE*), Dresden, Germany, Mar 2010**
28. Univ. Michigan WIMS Seminar, Ann-Arbor MI, Feb 2010
27. IMECE (Intl. Mech. Eng. Congress and Expo), Lake Buena Vista FL, Nov 2009
26. Univ. Maryland Physics Colloquium, College Park, MD, Oct 2009
25. UT Austin, Dept. of Mechanical Eng., Electrical Eng. and Physics, Austin TX, Sep 2009
24. **"Graphene Thermal Physics," invited tutorial at *IEEE Device Research Conference* (*DRC*), June 2009, State College PA**
23. University of Modena, Italy, June 2009
22. IRPS (Intl. Reliability Phys. Symp.), Montreal Canada, Apr 2009
21. IBM T.J. Watson Center, Yorktown Heights NY, Jan 2009
20. **ENIC-2008 (ASME 3rd Energy Nano Intl. Conf.) Keynote talk, Jacksonville FL, Aug 2008**
19. Argonne National Labs, Argonne IL, Aug 2008
18. 6th US-Japan Joint Seminar on Nanoscale Transport, MIT, Cambridge MA, Jul 2008
17. Northrop-Grumman Space Technology, Redondo Beach CA, Jun 2008
16. Institute for Energy Technology (IFE), Kjeller, Norway, Jun 2008
15. **"Memory Technology: Putting the *nano* in your iPod," University High School, Urbana IL, May 2008 – available on the nanoHUB.org**
14. Beckman Institute Nanohour, Urbana IL, May 2008 – available on the nanoHUB.org
13. Notre Dame Univ., Solid-State Colloquium, South Bend IN, Apr 2008
12. CSL (Coordinated Science Lab) Colloquium, UIUC, Feb 2008
11. ISDRS, University of Maryland, College Park, Dec 2007
10. ECE Colloquium, UIUC, Nov 2007
9. USC Dept. of EE Colloquium, Los Angeles, CA, Jun 2007
8. MRS Spring Meeting, San Francisco, CA, Apr 2007
7. **"Electro-Thermal Interaction, Modeling and Measurement in Nanoscale Devices," *Great Lakes VLSI Symposium* (*GLSVLSI*), Lago Maggiore, Italy, March 2007**
6. MSE Colloquium, Stanford University, Dec 2006
5. UIUC Dept. of ECE, Urbana IL, May 2006
4. Northwestern Dept. of EE, Evanston IL, Mar 2006
3. NASA Ames Research Center, Mountain View, CA, Nov 2005
2. HCIS-14 (Hot Carriers in Semiconductors), Chicago, IL, Jul 2005
1. UCLA Dept. of EE, Los Angeles CA, Apr 2005

Patents and Disclosures

11. L. Hoang, A.I. Khan, R.K.A. Bennett, A.J. Mannix, E. Pop, "Topological Weyl Semimetals for P-Type Contacts to Atomically Thin Two-Dimensional Materials and Methods of Integrating the Same," Provisional App. 63/572048, Mar 2024
10. K. Neilson, K. Nassiri Nazif, A.S. Daus, E. Pop, S. Hamtaei, "Method of fabricating high-efficiency transition metal dichalcogenide solar cells," Provisional App. 63/533474, Aug 2023
9. A. Kumar, K. Schauble, K.M. Neilson, E. Pop, K.C. Saraswat, "Apparatuses and Methods Involving Use of Low-Resistance Metal Contacts," U.S. Patent App. No. 63/275,794, Nov 4, 2021
8. S. Ueda, A. McLeod, A. Kummel, M. Burkland, S. Kilcoyne, E. Chumbles, T. Kazior, E. Pop, M. Chen,

C. Perez, M. Rodwell, "Low-Temperature Deposition of High-Quality Aluminum Nitride Films for Heat Spreading Applications," U.S. Patent App. No. 17/169914, Feb 8, 2021

7. A.I. Khan, E. Pop, R. Islam, H.-S.P. Wong, K.E. Goodson, M. Asheghi, H. Kwon, "Low-Power Phase-Change Memory Technology with Interfacial Thermoelectric Heating Enhancement," Provisional App. 63/089776, Oct 9, 2020
6. A. Daus, S. Vaziri, E. Pop, "Multi-layered semiconductive device and methodology with polymer and transition metal dichalcogenide material," App. 62/864232, Jun 6, 2019
5. Y. Kim, C. Ahn, A. Sood, E. Pop, H.-S.P. Wong, K.E. Goodson, S. Fong, S. Lee, C.M. Neumann, M. Asheghi, "Graphene-Inserted Phase Change Memory Device and Method of Fabricating the Same," US Patent 9,583,702, Feb 28, 2017
4. E. Pop, F. Xiong, M.-H. Bae, "Methods for Forming a Nanowire and Apparatus Thereof," US Patent 9,412,442, Aug 9, 2016
3. E. Pop, F. Xiong, A.D. Liao, "Adaptive Resistive Device and Methods Thereof," US Patent No. 9,324,422, Apr 26, 2016
2. E. Pop, "State Changing Device," US Patent No. 8,860,004, issued Oct. 14, 2014
1. E. Pop, "Resistive Changing Device," US Patent No. 8,586,961, issued Nov. 19, 2013

Students and Post-Docs Supervised

Post-Doctoral Researchers		**After Pop Lab or Current Position**
Ming-Hsun Lee	2025–	
Zherui Han	2024–	
Anton Persson	2023–	
Anh Tuan Hoang	2023–	
Tara Peña	2023–	
Koosha Nassiri Nazif	2021–24	Stealth Startup
Alwin Daus	2018–21	Asst. Prof., Univ. Stuttgart
Sam Vaziri	2016–20	TSMC
Kevin Brenner	2017–19	Asst. Prof., UT Dallas
Aditya Sood	2018	Asst. Prof. Princeton Univ.
Miguel Muñoz Rojo	2016–18	Assoc. Prof., CSIC/ICMM
Eilam Yalon	2015–18	Assoc. Prof., Technion
Yong Cheol Shin	2015–16	Korea Inst. Sci & Tech Eval & Planning (KISTEP)
Michal Mleczko	2017	Intel
Zuanyi Li	2014–15	ASML
Feng Xiong	2013–16	Assoc. Prof., Univ. Pittsburgh
Ashkan Behnam	2010–13	Intel
Myung-Ho Bae	2009–11	Korea Research Institute (KRISS)

Graduate Students Supervised		**After Pop Lab or Current Position**
Frederick Nitta	Ph.D. EE, expected 2029	
Young Suh Song	Ph.D. EE, expected 2029	
Sydney Fultz-Waters	Ph.D. MSE, expected 2028	
Yuan-Mau (Leo) Lee	Ph.D. MSE, expected 2028	
Haotian Su	Ph.D. EE, expected 2027	
Xiangjin Wu	Ph.D. EE, expected 2026	
Lauren Hoang	Ph.D. EE, expected 2026	

Robert Bennett	Ph.D. EE, expected 2026	
Maritha Wang	Ph.D. MSE, expected 2026	
Jerry Yang	Ph.D. EE, expected 2025	
Crystal Nattoo	Ph.D. EE, expected 2025	
Mahnaz Islam	Ph.D. EE, expected 2025	
Katie Neilson	Ph.D. EE, expected 2025	Intel
Sumaiya Wahid	Ph.D. EE, 2024	Samsung
Jung-Soo Ko	Ph.D. EE, 2024	Samsung
Çağıl Köroğlu	Ph.D. EE, 2024	DeepSim, Inc.
Marc Jaikissoon	Ph.D. EE, 2024	Intel
Asir Intisar Khan	Ph.D. EE, 2023	UC Berkeley
Michelle Chen	Ph.D. MSE, 2023	Stealth Startup
Connor Bailey	Ph.D. EE, 2023	Northrop Grumman
Victoria Chen	Ph.D. EE, 2022	Applied Materials
Kirstin Schauble	Ph.D. EE, 2022	Anello Photonics
Alexander Gabourie	Ph.D. EE, 2021	DeepSim, Inc.
Connor McClellan	Ph.D. EE, 2021	DeepSim, Inc.
Isha Datye	Ph.D. EE, 2020	TSMC
Stephanie Bohaichuk	Ph.D. EE, 2020	Univ. Waterloo, QV Ideas Lab
Runjie Lily Xu	Ph.D. EE, 2020	Apple
Sanchit Deshmukh	Ph.D. EE, 2020	Apple
Christopher Neumann	Ph.D. EE, 2019	Intel
Saurabh Suryavanshi	Ph.D. EE, 2018	ARM
Kirby Smithe	Ph.D. EE, 2018	Intel
Ning Wang	Ph.D. EE, 2018	Cirrus Logic
Feifei Lian	Ph.D. EE, 2018	Northrop Grumman
Christopher English	Ph.D. EE, 2017	Apple
Michal Mleczko	Ph.D. EE, 2016	post-doc, Stanford
Zuanyi Li	Ph.D. Physics, 2015	post-doc, Stanford
Sharnali Islam	Ph.D. ECE, 2015	Intel
Enrique Carrion	Ph.D. ECE, 2015	Intel
Andrey Serov	Ph.D. ECE, 2014	SanDisk
Kyle Grosse	Ph.D. MechSE, 2014	Raytheon
Vincent Dorgan	Ph.D. ECE, 2014	Intel
Feng Xiong	Ph.D. ECE, 2014	post-doc, Stanford
Joshua Wood	Ph.D. ECE, 2013	post-doc, Northwestern
David Estrada	Ph.D. ECE, 2013	Assoc. Prof., Boise State
Albert Liao	Ph.D. ECE, 2012	Micron
Zhun-Yong Ong	Ph.D. Physics, 2011	IHCP/A*STAR Singapore
Ryan Grady	M.S. EE, 2019	MicroLink Devices
Sungduk Hong	2011–13	UIUC MatSE
Austin Lyons	M.S. ECE, 2011	Intel
B. Ramasubramanian	M.S. ECE, 2010	Intel
Eros Reato	2023 (visiting from RWTH Aachen Univ., advisor: M. Lemme)	
Massimiliano Bianchi	2013 (visiting from Poli Milano, advisor: R. Sordan)	

Andrea Cappelli	2012–13 (visiting from U. Modena, advisor: C. Jacoboni)
Ilaria Imperiale	2011–12 (visiting from U. Bologna, advisor: M. Rudan)
Thierry Tsafack	2009–10 (visiting from U. Bologna, advisor: M. Rudan)

- **Undergraduate Researchers Supervised (Bachelor's Honors Theses in bold)**

  Harmon Gault (2024), **Frederick Nitta (2022-24)**, Aditya Bora (2023-24), Felix Zhang (2023), Vivian Auduong (2022), Connor Cremers (2022), Neel Roy (2021-22), Kamila Thompson (2021), Noor Fakih (2020), Maisy Lam (2020), Sidra Nadeem (2020), Paul Bates Walter (2019), Linsen Li (2018), Bozo Vareskic (2017), **Andrew Yu (2015-17)**, Stephone Christian (2016), Anika Manzo (2016), Aria Tedjarati (2016), Erin Antono (2015-16), Peter Satterthwaite (2015), Justin Doong (2014-15), Job Nalyanya (2014), Tim Anderson (2014), Yeshar Hadi (2014), **Maryann Tung (2013)**, **Muneeb Ahmed (2013)**, Juan Pablo Llinas (2012-13), **Christopher Neumann (2010-12)**, Alicia Hoag (2011-12), **Yuan Dai (2011-12)**, Akshay Malik (2011-12), Xuanyu Zhong (2011-12), **Sumit Dutta (2009-11)**, Daifeng Guo (2011), Jose Matamoros (2011), Eric Kwan (2011), **Gautam Shine (2011)**, **Feifei Lian (2009-11)**, Dominic Ortigara (2010), Shreya Prakash (2009-10), Chun-Ming Chin (2010), Jen-Chieh Liu (2010), Ryan Pecora (2009-10), **Yang Zhao (2008-09)**, Aidee San Miguel (2009), **I-Ru (Tim) Chen (2008)**, Jerry Lee (2008), **William Wahby (2007)**.

Collaborators and Former Advisors

- **Collaborators (last 48 months):**

  Zhenan Bao, Mark Brongersma, Wei Cai, Srabanti Chowdhury, Yi Cui, Jonathan Fan, Reinhold Dauskardt, Ian Fisher, David Goldhaber-Gordon, Kenneth Goodson, Tony Heinz, Roger Howe, Felipe da Jornada, Aaron Lindenberg, Fang Liu, Andrew Mannix, Subhasish Mitra, Yoshio Nishi, Piero Pianetta, Evan Reed, Alberto Salleo, Krishna Saraswat, Debbie Senesky, Z.-X. Shen, H.-S. Philip Wong, Xiaolin Zheng (Stanford), Rashid Bashir, David Cahill, William King, Joseph Lyding (UIUC), Deji Akinwande, Xiuling Li (UT Austin), Jonathan Bird (SUNY Buffalo), Ali Adibi, Suman Datta (GA Tech), Amir B. Farimani (CMU), Davide Donadio (UC Davis), Grace Xing, Debdeep Jena (Cornell), Robert Wallace (UT Dallas), Steve Koester (Univ. Minnesota), Zhihong Chen, Xiulin Ruan (Purdue), Shriram Ramanathan (Rutgers), Arka Majumdar (Univ. Washington), AKM Newaz (SFSU), Jeff Elam (Argonne), Andrey Krayev (Horiba Scientific), Suhas Kumar, Alec Talin (Sandia), R. Stanley Williams (HP), Jeong Moon (HRL), Jaewoo Jeong, Mahesh Samant (IBM), Stuart Parkin (IBM & Max Planck), Ilya Karpov (Intel), Sergiy Krylyuk, Albert Davydov, Huairuo Zhang (NIST), Vincent Gambin (Northrop Grumman), Mario Pelella (ON Semiconductor), Konstantinos Papagelis (Aristotle University of Thessaloniki), Tapio Ala-Nissilä, Esko Kauppinen (Aalto University), Natalio Mingo (CEA), Ajay K. Sood (IIS), Daniele Ielmini, Roman Sordan (Poli. Milano), Yee Kan Koh (NUS), Junichiro Shiomi (Univ. Tokyo), David Esseni (Univ. Udine), Tibor Grasser (TU Wien).

- **Advisors:**

  M.Eng. Thesis: Dimitri Antoniadis (MIT) and Peter Cottrell (IBM)

  Ph.D. Thesis: Kenneth Goodson and Robert Dutton (Stanford)

  Post-Doctoral: Hongjie Dai and Kenneth Goodson (Stanford)

Visitors Hosted

Minkyung Bae	2024	Samsung
Sarallah Hamtaei	2024	IMEC
Eros Reato	2023	RWTH Aachen University
Prof. Matthew Gilbert	2018	University of Illinois Urbana-Champaign
Mr. Luis Ruelas	Summer 2017	Downtown College Prep, Alum Rock

Prof. Xinran Wang	Spring 2017	Nanjing University
Prof. Akiko Ueda	Winter 2017	University of Tsukuba
Takaaki Uno	2015-2017	JSR Corp. Japan
Mr. Henry Fung	Summer 2016	Irvington High School, Fremont
Prof. Davide Donadio	Spring 2015	Max Planck, Mainz
Prof. Daniele Ielmini	Summer 2010	Politecnico di Milano
Prof. Junichiro Shiomi	Summer 2009	University of Tokyo