

THE UNIVERSITY OF TEXAS AT AUSTIN
Cockrell School of Engineering
Standard Resume

FULL NAME: Emanuel Tutuc **TITLE:** Professor

DEPARTMENT: Electrical and Computer Engineering

EDUCATION:

Princeton University	Physics	Ph.D.	August 2004
Princeton University	Physics	M.A.	January 2001
Princeton University	Electrical Engineering	M.A.	May 1999
University of Paris VI, Ecole Normale Supérieure	Physics	M.A.	June 1998
University of Paris VI, Ecole Normale Supérieure	Physics	B.Sc.	June 1997

CURRENT AND PREVIOUS ACADEMIC POSITIONS:

University of Texas at Austin	B. N. Gafford Professorship	2019 – present
University of Texas at Austin	Professor	2018 – present
University of Texas at Austin	Engr. Foundation Centennial Teaching Fellowship #2	2014 – 2019
University of Texas at Austin	Assoc. Professor	2012 – 2018
University of Texas at Austin	Assist. Professor	2007 – 2012

OTHER PROFESSIONAL EXPERIENCE:

I.B.M. - T.J. Watson Research Center	Post Doctoral Researcher	Nov. 2004 – Nov. 2006
Princeton University	Post Doctoral Researcher	Sept. 2004 – Nov. 2004

CONSULTING:

BetaBatt	June 2008 – March 2010
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HONORS AND AWARDS:

2016 – Fellow of the American Physical Society, Division of Condensed Matter Physics
 2010 – Nanoelectronics Research Initiative Inventor Recognition Award, 2010
 2009 – NSF CAREER Award
 2008 – DARPA/MTO Young Faculty Award
 2006 – *Who's who in Science and Technology*, (Marquis)
 2003 – **Charlotte Elizabeth Procter Fellowship**, awarded by Princeton University Graduate School for outstanding performance and professional promise.
 1998 – 1999 Princeton University First-year Merit Prize
 1996 – 1998 Fellowship of the French Government
 1993 – **Bronze Medal**, International Physics Olympiad, Williamsburg, U.S.A.
 First Prize, Romanian Physics Olympiad
 1992 – **First Prize**, Romanian Physics Olympiad

MEMBERSHIPS IN PROFESSIONAL AND HONORARY SOCIETIES:

American Physical Society (APS) - Fellow,
 Institute of Electrical and Electronics Engineers (IEEE) - Senior Member

UNIVERSITY COMMITTEE ASSIGNMENTS:

Departmental-	Faculty Recruiting Committee	2019 – 2020
	Peer Evaluation Committee	2019 – 2020
	Faculty Recruiting Committee	2016 – 2017
	ECE Colloquium & Distinguished Lecture Series Committee	2011 – 2013
	Solid State Electronics Area Graduate Coordinator	2017 –
	Solid State Electronics Area Admission Coordinator	2010 – 2017
	Member, ECE Undergraduate Curriculum Committee	2008 – 2009
	Member, Faculty Recruiting Committee	2007 – 2008
University-	Promotion and Tenure Committee - Cockrell School of Engr.	2019 – 2021
	Faculty Council Member	2015 – 2016
	UT Press Faculty Advisory Committee	2015 – 2016
	Faculty Council Member	2011 – 2013
	Recruitment and Retention Committee	2011 – 2012
	Recreational Sports Committee	2012 – 2013

PROFESSIONAL SOCIETY AND MAJOR GOVERNMENTAL COMMITTEES:**A. GOVERNMENTAL COMMITTEES:**

1. Served on the CAREER proposal panels for the National Science Foundation, Division of Materials Research, 2009; Division of Electrical, Communications and Cyber Systems, 2018.
2. Served on proposal evaluation panel: National Science Foundation, Division of Materials Research, 2011, 2013, 2016, 2017, 2018; National Science Foundation, Division of Electrical, Communications and Cyber Systems 2017.
3. Served on the Graduate Research Fellowship panel, National Science Foundation, Physics, 2010; Materials Research, 2013.
4. Served on the SMART fellowship panel, Department of Defense, 2011.
5. National Research Council associates program review: 2016, 2017, 2018.

B. PROFESSIONAL SOCIETY SERVICE:

1. Associate Editor for *Applied Physics Letters*, May 2018 – .
2. Associate Editor for *IEEE Transactions on Nanotechnology*, Oct 2011 – Oct 2016.
3. Reviewer for the following journals: *Science*, *Physical Review Letters*, *Physical Review B*, *Applied Physics Letters*, *Journal of Applied Physics*, *Physica E*, *International Journal of Modern Physics B*, *IEEE Electron Device Letters*, *IEEE Transactions on Electron Devices*.
4. Member of the Emerging Research Materials working group of the International Technology Roadmap for Semiconductors, 2007 Edition, 2013 Edition.
5. American Vacuum Society, Electronic Materials and Processing Division - Executive Committee member.
6. 4th International SiGe, Ge, & Related Compounds Symposium, Oct 11th - 14th Honolulu, HI - Technical Program Committee.
7. SPIE (international society for optics and photonics), Nanoepitaxy: Materials and Devices Technical Program Committee 2010, 2011.
8. IEEE USA Awards committee 2010, 2011, 2012, 2013.

COMMUNITY ACTIVITIES:

1. Participated in activities organized by the Women in Engineering Program at the University of Texas: Lunch with an Engineer, Introduce a Girl to Engineering Day.
2. Presented lecture on Nanoelectronics at "Engineering Day" at Madison High School in San Antonio, an organized event to encourage students to consider careers in science and engineering.

PUBLICATIONS: *names in italics indicate students advised or co-advised at UT

A. Refereed Archival Journal Publications

1. "Resistance spikes at transitions between quantum Hall ferromagnets", E.P. De Poortere, **E. Tutuc**, S.J. Papadakis, M. Shayegan, *Science* **290**, 1546-1549 (Nov. 2000). <http://www.sciencemag.org/content/290/5496/1546.full>
2. "In-plane magnetic field-induced spin polarization and transition to insulating behavior in two-dimensional hole systems", **E. Tutuc**, E.P. De Poortere, S.J. Papadakis, M. Shayegan, *Physical Review Letters* **86**, 2858-2861 (March 2001). <http://dx.doi.org/10.1103/PhysRevLett.86.2858>
3. "Spin polarization and g factor of a dilute GaAs two-dimensional electron system", **E. Tutuc**, S. Melinte, M. Shayegan, *Physical Review Letters* **88**, 036805 (Jan. 2002). <http://dx.doi.org/10.1103/PhysRevLett.88.036805>
4. "Anomalous giant Rashba spin splitting in two-dimensional hole systems", R. Winkler, H. Noh, **E. Tutuc**, M. Shayegan, *Physica E* **12**, 428-431 (Jan. 2002). [http://dx.doi.org/10.1016/S1386-9477\(01\)00329-0](http://dx.doi.org/10.1016/S1386-9477(01)00329-0)
5. "Measurements of the effective g-factor in dilute GaAs 2D electrons", **E. Tutuc**, M. Shayegan, *Physica E* **12**, 420-423 (Jan. 2002). [http://dx.doi.org/10.1016/S1386-9477\(01\)00324-1](http://dx.doi.org/10.1016/S1386-9477(01)00324-1)
6. "Hysteretic resistance spikes at transitions between quantum Hall ferromagnets in AlAs 2D electrons", E.P. De Poortere, **E. Tutuc**, M. Shayegan, *Physica E* **12**, 36-38 (Jan. 2002). [http://dx.doi.org/10.1016/S1386-9477\(01\)00301-0](http://dx.doi.org/10.1016/S1386-9477(01)00301-0)
7. "Spin polarization and transition from metallic to insulating behavior in 2D systems", **E. Tutuc**, E.P. De Poortere, S.J. Papadakis, M. Shayegan, *Physica E* **13**, 748-751 (March 2002). [http://dx.doi.org/10.1016/S1386-9477\(02\)00274-6](http://dx.doi.org/10.1016/S1386-9477(02)00274-6)
8. "Anomalous Rashba spin splitting in two-dimensional hole systems", R. Winkler, H. Noh, **E. Tutuc**, M. Shayegan, *Physical Review B* **65**, 155303 (March 2002). <http://dx.doi.org/10.1103/PhysRevB.65.155303>
9. "Enhanced electron mobility and high order fractional quantum Hall states in AlAs quantum wells", E.P. De Poortere, Y.P. Shkolnikov, **E. Tutuc**, S.J. Papadakis, M. Shayegan, E. Palm, T. Murphy, *Applied Physics Letters* **80**, 1583-1585 (March 2002). <http://dx.doi.org/10.1063/1.1456265>
10. "Frictional drag between two dilute two-dimensional hole layers", R. Pillarisetty, H. Noh, D.C. Tsui, E. P. De Poortere, **E. Tutuc**, M. Shayegan, *Physical Review Letters* **89**, 016805 (June 2002). <http://dx.doi.org/10.1103/PhysRevLett.89.016805>
11. "Quantum Hall effect in AlAs 2D electron systems", E.P. De Poortere, **E. Tutuc**, Y.P. Shkolnikov, K. Vakili, M. Shayegan, E. Palm, T. Murphy, *International Journal of Modern Physics B* **16** (20-22), 2917-2822 (Aug. 2002). <http://dx.doi.org/10.1142/S0217979202013201>
12. "Magnetic-field-induced spin polarization of AlAs two-dimensional electrons", E.P. De Poortere, **E. Tutuc**, Y. P. Shkolnikov, K. Vakili, M. Shayegan, *Physical Review B* **66**, 161308(R) (Oct. 2002). <http://dx.doi.org/10.1103/PhysRevB.66.161308>
13. "Valley splitting of AlAs two-dimensional electrons in a perpendicular magnetic field", Y.P. Skolnikov, E.P. De Poortere, **E. Tutuc**, M. Shayegan, *Physical Review Letters* **89**, 226805 (Nov. 2002). <http://dx.doi.org/10.1103/PhysRevLett.89.226805>
14. "In-Plane Magnetodrag between Dilute Two-Dimensional Systems", R. Pillarisetty, H. Noh, **E. Tutuc**, E.P. De Poortere, D.C. Tsui, M. Shayegan, *Physical Review Letters* **90**, 226801 (June 2003). <http://dx.doi.org/10.1103/PhysRevLett.90.226801>
15. "Role of finite layer thickness in spin polarization of GaAs two-dimensional electrons in strong parallel magnetic fields", **E. Tutuc**, S. Melinte, E.P. De Poortere, M. Shayegan, R. Winkler, *Physical Review B* **67**, 241309(R) (June 2003). <http://dx.doi.org/10.1103/PhysRevB.67.241309>
16. "Role of density imbalance in an interacting bilayer hole system", **E. Tutuc**, S. Melinte, E.P. De Poortere, R. Pillarisetty, M. Shayegan, *Physical Review Letters* **91**, 076802 (Aug. 2003). <http://dx.doi.org/10.1103/PhysRevLett.91.076802>
17. "Critical resistance in the AlAs quantum Hall ferromagnet", E.P. De Poortere, **E. Tutuc**, M. Shayegan, *Physical Review Letters* **91**, 216802 (Nov. 2003). <http://dx.doi.org/10.1103/PhysRevLett.91.216802>
18. "Layer-charge instability in unbalanced bilayer systems in the quantum Hall regime", **E. Tutuc**, R. Pillarisetty, S. Melinte, E.P. De Poortere, M. Shayegan, *Physical Review B* **68**, 201308(R) (Nov. 2003). <http://dx.doi.org/10.1103/PhysRevB.68.201308>

19. "Magnetism and pseudo-magnetism in quantum Hall systems", E.P. De Poortere, **E. Tutuc**, R. Pillarisetty, S. Melinte, M. Shayegan, *Physica E* **20**, 123-132 (Dec. 2003). <http://dx.doi.org/10.1016/j.physe.2003.09.029>
20. "Laterally Modulated 2D Electron System in the Extreme Quantum Limit", S. Melinte, M. Berciu, C. Zhou, **E. Tutuc**, S.J. Papadakis, C. Harrison, E.P. De Poortere, M. Wu, P.M. Chaikin, M. Shayegan, R.N. Bhatt, R.A. Register, *Physical Review Letters* **92**, 036802 (Jan. 2004). <http://dx.doi.org/10.1103/PhysRevLett.92.036802>
21. "Spin splitting in GaAs (100) two dimensional holes", B. Habib, **E. Tutuc**, S. Melinte, M. Shayegan, D. Wasserman, S.A. Lyon, R. Winkler, *Physical Review B* **69**, 113311 (March 2004). <http://dx.doi.org/10.1103/PhysRevB.69.113311>
22. "Realization of an interacting two-valley AlAs bilayer system", K. Vakili, Y.P. Shkolnikov, **E. Tutuc**, E.P. De Poortere, M. Shayegan, *Physical Review Letters* **92**, 186404 (May 2004). <http://dx.doi.org/10.1103/PhysRevLett.92.186404>
23. "Frictional drag between dilute two-dimensional hole systems", R. Pillarisetty, H. Noh, **E. Tutuc**, E.P. De Poortere, D.C. Tsui, M. Shayegan, *Physica E* **22**, 300-303 (April 2004). <http://dx.doi.org/10.1016/j.physe.2003.12.006>
24. "Interacting GaAs bilayer hole systems with layer density imbalance", **E. Tutuc**, S. Melinte, E.P. De Poortere, R. Pillarisetty, M. Shayegan, *Physica E* **22**, 32-35 (April 2004). <http://dx.doi.org/10.1016/j.physe.2003.11.209>
25. "Spin susceptibility of two-dimensional electrons in narrow AlAs quantum wells", K. Vakili, Y.P. Shkolnikov, **E. Tutuc**, E.P. De Poortere, M. Shayegan, *Physical Review Letters* **92**, 226401 (July 2004). <http://dx.doi.org/10.1103/PhysRevLett.92.226401>
26. "Counterflow measurements in strongly correlated GaAs hole bilayers: Evidence for electron-hole pairing", **E. Tutuc**, M. Shayegan, D.A. Huse, *Physical Review Letters* **93**, 036802 (July 2004). <http://dx.doi.org/10.1103/PhysRevLett.93.036802>
27. "Negative differential Rashba effect in two-dimensional hole systems", B. Habib, **E. Tutuc**, S. Melinte, M. Shayegan, D. Wasserman, S.A. Lyon, R. Winkler, *Applied Physics Letters* **85**, 3151-3153 (Oct. 2004). <http://dx.doi.org/10.1063/1.1806543>
28. "Counterflow measurements in GaAs hole bilayers: possible evidence for excitonic condensation", **E. Tutuc**, M. Shayegan, *International Journal of Modern Physics B* **18**, 3685-3692 (Nov. 2004). <http://dx.doi.org/10.1142/S0217979204027281>
29. "Ballistic electron transport in AlAs quantum wells", O. Gunawan, Y.P. Shkolnikov, E.P. De Poortere, **E. Tutuc**, M. Shayegan, *Physical Review Letters* **93**, 246603-246606 (Dec. 2004). <http://dx.doi.org/10.1103/PhysRevLett.93.246603>
30. "Spin polarization dependence of the Coulomb drag at large r_s ", R. Pillarisetty, H. Noh, **E. Tutuc**, E.P. De Poortere, D.C. Tsui, M. Shayegan, *Physical Review Letters* **94**, 016807 (Jan. 2005). <http://dx.doi.org/10.1103/PhysRevLett.94.016807>
31. "Thermopower of interacting GaAs bilayer hole systems in the reentrant insulating phase near $\nu=1$ ", S. Faniel, **E. Tutuc**, E.P. De Poortere, C. Gustin, A. Vlad, S. Melinte, M. Shayegan, V. Bayot, *Physical Review Letters* **94**, 046802 (Feb. 2005). <http://dx.doi.org/10.1103/PhysRevLett.94.046802>
32. "Coulomb drag near the metal-insulator transition in two dimensions", R. Pillarisetty, H. Noh, **E. Tutuc**, E.P. De Poortere, K. Lai, D.C. Tsui, M. Shayegan, *Physical Review B* **71**, 115307 (March 2005). <http://dx.doi.org/10.1103/PhysRevB.71.115307>
33. "Spin-dependent resistivity at transitions between integer quantum Hall states", K. Vakili, Y.P. Shkolnikov, **E. Tutuc**, N.C. Bishop, E.P. De Poortere, M. Shayegan, *Physical Review Letters* **94**, 176402 (May 2005). <http://link.aps.org/doi/10.1103/PhysRevLett.94.176402>
34. "Interaction and disorder in bilayer counterflow transport at filling factor one", **E. Tutuc**, M. Shayegan, *Physical Review B* **72**, 081307(R) (Aug. 2005). <http://link.aps.org/doi/10.1103/PhysRevB.72.081307>
35. "Anomalous spin polarization of GaAs two-dimensional hole systems", R. Winkler, **E. Tutuc**, S.J. Papadakis, S. Melinte, M. Shayegan, D. Wasserman, S.A. Lyon, *Physical Review B* **72**, 195321 (Nov. 2005). <http://link.aps.org/doi/10.1103/PhysRevB.72.195321>
36. "Morphology of germanium nanowires grown in presence of B_2H_6 ", **E. Tutuc**, S. Guha, J.O. Chu, *Applied Physics Letters* **88**, 043113-043115 (Jan. 2006). <http://dx.doi.org/10.1063/1.2165089>
37. "Effect of Oxide Overlayer Formation on the Growth of Gold Catalyzed Epitaxial Silicon Nanowires", H. Jagannathan, Y. Nishi, M.C. Reuter, M. Copel, **E. Tutuc**, S. Guha, R. Pezzi, *Applied Physics Letters* **88**, 103113 (March 2006). <http://dx.doi.org/10.1063/1.2179370>

38. "Spin-dependent resistivity and quantum Hall ferromagnetism in two-dimensional electrons confined to AlAs quantum wells", K. Vakili, Y.P. Shkolnikov, **E. Tutuc**, N.C. Bishop, E.P. De Poortere, M. Shayegan, *Physica E* **34**, 89-92 (Aug. 2006). <http://dx.doi.org/10.1016/j.physe.2006.02.026>
39. "Coulomb drag experiments in low density 2D hole bilayers", R. Pillarisetty, H. Noh, **E. Tutuc**, E.P. De Poortere, D.C. Tsui, M. Shayegan, *Physica E* **34**, 63-68 (Aug. 2006). <http://dx.doi.org/10.1016/j.physe.2006.02.017>
40. "Bilayer counterflow transport at filling factor 1 in the strong interacting regime", **E. Tutuc**, M. Shayegan, *Physica E* **34**, 11-15 (Aug. 2006). <http://dx.doi.org/10.1016/j.physe.2006.02.012>
41. "Thermopower evidence for Wigner crystallization in the insulating phase of two-dimensional GaAs bilayer hole systems", S. Faniel, **E. Tutuc**, E.P. De Poortere, C. Gustin, A. Vlad, L. Moldovan, S. Melinte, M. Shayegan, V. Bayot, *Physica E* **34**, 120-123 (Aug. 2006). <http://dx.doi.org/10.1016/j.physe.2006.02.040>
42. "High-mobility AlAs quantum wells with out-of-plane valley occupation", K. Vakili, Y. P. Shkolnikov, **E. Tutuc**, E. P. De Poortere, M. Padmanabhan, M. Shayegan, *Applied Physics Letters* **89**, 172118 (Oct. 2006). <http://dx.doi.org/10.1063/1.2370504>
43. "Zeeman splitting of interacting two-dimensional electrons with two effective masses", K. Vakili, **E. Tutuc**, M. Shayegan, *Solid State Communications* **140**, 285-288 (Nov. 2006). <http://dx.doi.org/10.1016/j.ssc.2006.08.033>
44. "Two-dimensional electrons occupying multiple valleys in AlAs", M. Shayegan, E. P. De Poortere, O. Gunawan, Y. P. Shkolnikov, **E. Tutuc**, K. Vakili, *physica status solidi (b)* **243**, 3629-3642 (Aug. 2006). <http://onlinelibrary.wiley.com/doi/10.1002/pssb.200642212/abstract>
45. "Realization of a linear germanium nanowire p-n junction", E. Tutuc, J. Appenzeller, M. C. Reuter, S. Guha, *Nano Letters* **6**, 2070-2074 (Aug. 2006). <http://pubs.acs.org/doi/abs/10.1021/nl061338f>
46. "Negative differential resistance in ultra-thin Ge-on-insulator FETs", D. Kazazis, A. Zaslavsky, E. Tutuc, N. A. Bojarczuk, S. Guha, *Semiconductor Science and Technology* **22**, S1-S4 (Nov. 2007). <http://dx.doi.org/10.1088/0268-1242/22/1/S01>
47. "Doping of germanium nanowires grown in presence of PH₃", **E. Tutuc**, J. O. Chu, J. A. Ott, S. Guha, *Applied Physics Letters* **89**, 263101 (2006). <http://dx.doi.org/10.1063/1.2410238>
48. "Strong Aharonov-Bohm oscillations in GaAs two dimensional holes", B. Habib, **E. Tutuc**, M. Shayegan, *Applied Physics Letters* **90**, 152104-152106 (April 2007). <http://dx.doi.org/10.1063/1.2720711>
49. "In-plane magnetic-field-induced metal-insulator transition in (311)A GaAs two dimensional hole systems probed by thermopower", S. Faniel, L. Moldovan, A. Vlad, **E. Tutuc**, N. Bishop, S. Melinte, M. Shayegan, V. Bayot, *Physical Review B* **76**, 161307 (Oct. 2007). <http://link.aps.org/doi/10.1103/PhysRevB.76.161307>
50. "Pinning modes and interlayer correlation in high-magnetic-field bilayer Wigner solids", Z. Wang, Y. P. Chen, L. W. Engel, D. C. Tsui, **E. Tutuc**, M. Shayegan, *Physical Review Letters* **99**, 136804 (Sept. 2007). <http://link.aps.org/doi/10.1103/PhysRevLett.99.136804>
51. "Charge neutral counterflow transport at filling factor 1 in GaAs hole bilayers" (invited), **E. Tutuc**, M. Shayegan, *Solid State Communications* **144**, 405-408 (Dec. 2007). <http://dx.doi.org/10.1016/j.ssc.2007.07.040>
52. "Impact of surface chemical treatment on capacitance-voltage characteristics of GaAs metal-oxide-semiconductor capacitors with Al₂O₃ gate dielectric", D. Shahrjerdi, **E. Tutuc**, S.K. Banerjee, *Applied Physics Letters* **91**, 063501 (Aug. 2007). <http://dx.doi.org/10.1063/1.2764438>
53. "Spin susceptibility of interacting two-dimensional electrons with anisotropic effective mass", T. Gokmen, M. Padmanabhan, **E. Tutuc**, M. Shayegan, S. De Palo, S. Moroni, G. Senatore, *Physical Review B* **76**, 233301 (Dec. 2007). <http://link.aps.org/doi/10.1103/PhysRevB.76.233301>
54. "GaAs metal-oxide-semiconductor capacitors using atomic layer deposition of HfO₂ gate dielectric: Fabrication and characterization", D. Shahrjerdi, D. I. Garcia-Gutierrez, T. Akyol, S. R. Bank, E. Tutuc, J. C. Lee, and S. K. Banerjee, *Applied Physics Letters* **91**, 193503 (Nov. 2007). <http://dx.doi.org/10.1063/1.2806190>
55. "Quantum Hall effect in a multi-valley two-dimensional electron system", M. Shayegan, E. P. De Poortere, O. Gunawan, Y. P. Shkolnikov, E. Tutuc, K. Vakili, *International Journal of Modern Physics B* **21**, 1388-1397 (April 2008). <http://dx.doi.org/10.1142/S0217979207042884>
56. "Tunneling between dilute GaAs hole layers", S. Misra, N. C. Bishop, **E. Tutuc**, M. Shayegan, *Physical Review B* **77**, 161301(R) (April 2008). <http://link.aps.org/doi/10.1103/PhysRevB.77.161301>

57. "Valley susceptibility of interacting electrons and composite fermions", N. C. Bishop, M. Padmanabhan, O. Gunawan, T. Gokmen, E. P. De Poortere, Y. P. Shkolnikov, **E. Tutuc**, K. Vakili, M. Shayegan, *Physica E* **40**, 986-989 (March 2008). <http://dx.doi.org/10.1016/j.physe.2007.08.067>
58. "Self-aligned inversion-type enhancement-mode GaAs metal-oxide-semiconductor field-effect transistor with Al₂O₃ gate dielectric", D. Shahrjerdi, T. Akyol, M. Ramon, D. I. Garcia-Gutierrez, **E. Tutuc**, S. K. Banerjee, *Applied Physics Letters* **92**, 203505 (May 2008). <http://dx.doi.org/10.1063/1.2931708>
59. "Fabrication of self-aligned enhancement-mode In_{0.53}Ga_{0.47}As MOSFETs with TaN/HfO₂/AlN gate stack, D. Shahrjerdi", T. Rotter, G. Balakrishnan, D. Huffaker, **E. Tutuc**, S. K. Banerjee, *IEEE Electron Device Letters* **29**, 557-560 (June 2008). <http://dx.doi.org/10.1109/LED.2008.922031>
60. "Fabrication and characterization of metal-oxide-semiconductor GaAs capacitors on Ge/Si_{1-x}Ge_x/Si substrates with Al₂O₃ gate dielectric", D. Shahrjerdi, N. Nuntawong, G. Balakrishnan, D. I. Garcia-Gutierrez, A. Khoshakhlagh, **E. Tutuc**, D. Huffaker, J. C. Lee, S. K. Banerjee, *Journal of Vacuum Science and Technology B* **26**, 1182-1186 (May 2008). <http://dx.doi.org/10.1116/1.2835061>
61. "Chemical and physical interface studies of the atomic-layer-deposited Al₂O₃ on GaAs substrates", D. Shahrjerdi, D. I. Garcia-Gutierrez, **E. Tutuc**, S. K. Banerjee, *Applied Physics Letters* **92**, 223501 (2008). <http://dx.doi.org/10.1063/1.2937404>
62. "Dynamic of Density Imbalanced Bilayer Holes in the Quantum Hall Regime", S. Misra, N. C. Bishop, **E. Tutuc**, M. Shayegan, *Phys. Rev. B* **78**, 035322 (July 2008). <http://link.aps.org/doi/10.1103/PhysRevB.78.035322>
63. "Doping of Ge-Si_xGe_{1-x} core-shell nanowires using low energy ion implantation", J. Nah, K. Varahramyan, E.-S. Liu, S. K. Banerjee, **E. Tutuc**, *Applied Physics Letters* **93**, 203108 (2008). <http://dx.doi.org/10.1063/1.3013335>
64. "Giant frictional drag in strongly interacting bilayers near filling factor one", **E. Tutuc**, R. Pillarisetty, M. Shayegan, *Physical Review B* **79**, 041303(R) (Jan. 2009). <http://link.aps.org/doi/10.1103/PhysRevB.79.041303>
65. "Realization of a high mobility dual-gated graphene field effect transistor with Al₂O₃ dielectric", S. Kim, J. Nah, I. Jo, D. Shahrjerdi, L. Colombo, Z. Yao, **E. Tutuc**, S. K. Banerjee, *Applied Physics Letters* **94**, 062107-062109 (Feb. 2009). <http://dx.doi.org/10.1063/1.3077021>
66. "Realization of dual-gated Ge-Si_xGe_{1-x} core-shell nanowire field effect transistors with highly doped source and drain", J. Nah, E.-S. Liu, D. Shahrjerdi, K. Varahramyan, S. K. Banerjee, **E. Tutuc**, *Applied Physics Letters* **94**, 063117 (Feb. 2009). <http://dx.doi.org/10.1063/1.3079410>
67. "Negative Differential Resistance in Buried-Channel Ge_xC_{1-x} pMOSFETs", E.-S. Liu, D. Q. Kelly, J. P. Donnelly, **E. Tutuc**, S. K. Banerjee, *IEEE Electron Device Letters* **30**, 136-138 (Feb. 2009). <http://dx.doi.org/10.1109/LED.2008.2009364>
68. "Bilayer PseudoSpin Field-Effect Transistor (BISFET): A Proposed New Logic Device", S. K. Banerjee, L. F. Register, **E. Tutuc**, D. Reddy, A. H. MacDonald, *IEEE Electron Device Letters* **30**, 158-160 (Feb. 2009). <http://dx.doi.org/10.1109/LED.2008.2009362>
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144. "Enhanced Electron Mobility in Nonplanar Tensile Strained Si Epitaxially Grown on Si_xGe_{1-x} Nanowires", F. Wen, **E. Tutuc**, *Nano Letters* **18**, 94 (Jan. 2018). <http://dx.doi.org/10.1021/acs.nanolett.7b03450>
145. "Photonic-crystal exciton-polaritons in monolayer semiconductors", L. Zhang, R. Gogna, G. W. Burg, **E. Tutuc**, H. Deng, *Nature Communications* **9**, 713 (Feb. 2018). <http://dx.doi.org/10.1038/s41467-018-03188-x>
146. "Tunable Gamma - K Valley Populations in Hole-Doped Trilayer WSe₂", H. C. P. Movva, T. Lovorn, B. Fallahazad, S. Larentis, K. Kim, T. Taniguchi, K. Watanabe, S. K. Banerjee, Allan H. MacDonald, **E. Tutuc**, *Physical Review Letters* **120**, 107703 (Mar. 2018). <http://dx.doi.org/10.1103/PhysRevLett.120.107703>
147. "Strongly Enhanced Tunneling at Total Charge Neutrality in Double-Bilayer Graphene-WSe₂ Heterostructures", G. W. Burg, N. Prasad, K. Kim, T. Taniguchi, K. Watanabe, A. H. MacDonald, L. F. Register, **E. Tutuc**, *Physical Review Letters* **120**, 177702 (2018). <http://doi.org/10.1103/PhysRevLett.120.177702>
148. "Large effective mass and interaction-enhanced Zeeman splitting of K-valley electrons in MoSe₂", S. Larentis, H. C. P. Movva, B. Fallahazad, K. Kim, A. Behroozi, T. Taniguchi, K. Watanabe, S. K. Banerjee, **E. Tutuc**, *Physical Review B* **97**, 201407(R) (2018). <http://doi.org/10.1103/PhysRevB.97.201407>
149. "Hubbard Model Physics in Transition Metal Dichalcogenide Moiré Bands", F. Wu, T. Lovorn, **E. Tutuc**, A. H. MacDonald, *Physical Review Letters* **120**, 177702 (2018). <https://doi.org/10.1103/PhysRevLett.121.026402>
150. "Topologically Protected Helical States in Minimally Twisted Bilayer Graphene", S. Huang, K. Kim, D. K. Efimkin, T. Lovorn, T. Taniguchi, K. Watanabe, A. H. MacDonald, **E. Tutuc**, B. J. LeRoy, *Physical Review Letters* **121**, 037702 (2018). <https://doi.org/10.1103/PhysRevLett.121.037702>
151. "Spin-Conserving Resonant Tunneling in Twist-Controlled WSe₂-hBN-WSe₂ Heterostructures", K. Kim, N. Prasad, H. C. P. Movva, G. William Burg, Y. Wang, S. Larentis, T. Taniguchi, K. Watanabe, L. F. Register, **E. Tutuc**, *Nano Letters* **18**, 5967-5973 (2018). <https://doi.org/10.1021/acs.nanolett.8b02770>
152. "Strained Si_xGe_{1-x}-Ge-Si core-double-shell nanowire heterostructures for simultaneous hole and electron mobility enhancement", F. Wen, E. Tutuc, *Applied Physics Letters* **113**, 113102 (2018). <https://doi.org/10.1063/1.5047212>
153. "Topological Insulators in Twisted Transition Metal Dichalcogenide Homobilayers", F. Wu, T. Lovorn, **E. Tutuc**, Ivar Martin, A. H. MacDonald, *Physical Review Letters* **122**, 086402 (2019). <https://doi.org/10.1103/PhysRevLett.122.086402>
154. "Evidence for moiré excitons in van der Waals heterostructures", K. Tran, G. Moody, F. Wu, X. Lu, J. Choi, K. Kim, A. Rai, D. A. Sanchez, J. Quan, A. Singh, J. Embley, A. Zepeda, M. Campbell, T. Autry, T. Taniguchi, K. Watanabe, N. Lu, S. K. Banerjee, K. L. Silverman, S. Kim, **E. Tutuc**, L. Yang, A. H. MacDonald, X. Li, *Nature* **567**, 71-75 (2019). <https://doi.org/10.1038/s41586-019-0975-z>
155. "Thermal conductivity measurement and analysis of Ge-Si_xGe_{1-x} core-shell nanowires", H. Park, J. Han, D. C. Dillen, J. Park, C. Kim, M. Sim, J. Nah, J. Lim, **E. Tutuc**, J. H. Seol, *Applied Physics Express* **12**, 045001 (2019). <https://doi.org/10.7567/1882-0786/ab0744>
156. "Measurement of carrier lifetime in micron-scaled materials using resonant microwave circuits", S. Dev, Y. Wang, K. Kim, M. Zamiri, C. Kadlec, M. Goldflam, S. Hawkins, E. Shaner, J. Kim, S. Krishna, M. Allen, J. Allen, **E. Tutuc**, D. Wasserman, *Nature Communications* **10**, 1625 (2019). <https://doi.org/10.1038/s41467-019-09602-2>
157. "Highly valley-polarized singlet and triplet interlayer excitons in van der Waals heterostructure", L. Zhang, R. Gogna, G. W. Burg, J. Horng, E. Paik, Y.-H. Chou, K. Kim, **E. Tutuc**, H. Deng, *Physical Review B* **100**, 041402(R) (2019). <https://doi.org/10.1103/PhysRevB.100.041402>
158. "Correlated Insulating States In Twisted Double Bilayer Graphene", G. W. Burg, J. Zhu, T. Taniguchi, K. Watanabe, A. H. MacDonald, E. Tutuc, *Physical Review Letters* **123**, 197702 (2019). <https://doi.org/10.1103/PhysRevLett.123.197702>

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B. Refereed Conference Proceedings

1. "Realization of a Ge nanowire p-n junction", **E. Tutuc**, J. Appenzeller, M.C. Reuter, S. Guha, *64th Device Research Conference*, pp. 249-250 (June 2006). <http://dx.doi.org/10.1109/DRC.2006.305078>
2. "Dual gate silicon nanowire transistors with nickel silicide contacts", J. Appenzeller, J. Knoch, **E. Tutuc**, M. Reuter, S. Guha, *International Electron Devices Meeting*, pp. 1-4 (Dec. 2006). <http://dx.doi.org/10.1109/IEDM.2006.346842>
3. "Enhanced Channel Mobility Materials for MOSFETs on Si Substrates", J. Donnelly, D. Shahrjerdi, D. Kelly, **E. Tutuc**, S. Banerjee, *ECS Transactions* **11**, (6) 47-60 (Oct. 2007). <http://dx.doi.org/10.1149/1.2780764>
4. "A Comprehensive Study of Growth Techniques and Characterization of Epitaxial Ge_{1-x}C_x (111) Layers Grown Directly on Si (111) for MOS Applications", M. Jamil, J.P. Donnelly, S.H. Lee, D. Shahrjerdi, T. Akyol, **E. Tutuc**, S.K. Banerjee, *MRS Proc.* **1068**, 273 (Jan. 2008). <http://dx.doi.org/10.1557/PROC-1068-C07-03>
5. "Impact of metal contact depth on device performance in back-gated semiconductor nanowire field effect transistors", E.-S. Liu, N. Jain, K. Varahramyan, J. Nah, S.K. Banerjee, **E. Tutuc**, *66th Device Research Conference Digest*, pp. 191-192 (June 2008). <http://dx.doi.org/10.1109/DRC.2008.4800798>
6. "Performance Analysis of Germanium Nanowire Tunneling Field Effect Transistors", N. Jain, **E. Tutuc**, S.K. Banerjee, L.F. Register, *66th Device Research Conference Digest*, pp. 99-100 (June 2008). <http://dx.doi.org/10.1109/DRC.2008.4800753>
7. "Vertical Flash memory devices with Protein-assembled Nanocrystal floating gate and Al₂O₃ control oxide", F. Ferdousi, J. Sarkar, S. Tang, D. Shahrjerdi, T. Akyol, J. P. Donnelly, **E. Tutuc**, S. K. Banerjee, *66th Device Research Conference Digest*, pp. 57-58 (June 2008). <http://dx.doi.org/10.1109/DRC.2008.4800732>
8. "Opportunities for Group IV Nanowire Devices in Si CMOS Technology", **E. Tutuc**, S. Banerjee, J. Nah, K. Varahramyan, N. Jain, D. Ferrer, *ECS Transactions* **16**, (10) 735-740 (Oct. 2008). <http://dx.doi.org/10.1149/1.2986832>
9. "Fabrication of Self-aligned Enhancement-mode n-channel GaAs MOSFETs Employing a Wet Clean Process for GaAs Substrates", D. Shahrjerdi, D. Garcia-Gutierrez, S. Kim, M.M. Hasan, K. Varahramyan, **E. Tutuc**, S. Banerjee, *ECS Transactions* **16**, (4) 59-67 (Oct. 2008). <http://dx.doi.org/10.1149/1.2979981>
10. "Accurate Inversion Charge and Mobility Measurements in Enhancement-mode GaAs Field-Effect Transistors with High-k Gate Dielectrics", D. Shahrjerdi, J. Nah, T. Akyol, M. Ramon, **E. Tutuc**, S.K. Banerjee, *67th Device Research Conference*, pp. 73-74 (June 2009). <http://dx.doi.org/10.1109/DRC.2009.5354894>
11. "Bilayer pseudoSpin Field Effect Transistor (BiSFET): a proposed logic device and circuits", D. Reddy, L.F. Register, **E. Tutuc**, A. MacDonald, S.K. Banerjee, *67th Device Research Conference*, pp.67-68 (June 2009). <http://dx.doi.org/10.1109/DRC.2009.5354891>
12. "Top-gated Ge-Si_xGe_{1-x} core-shell nanowire field-effect transistors with highly doped source and drain", J. Nah, E.-S. Liu, K.M. Varahramyan, D. Shahrjerdi, S.K. Banerjee, **E. Tutuc**, *67th Device Research Conference*, pp. 15-16 (June 2009). <http://dx.doi.org/10.1109/DRC.2009.5354970>
13. "Growth and electronic properties of Ge-Si_xGe_{1-x} core-shell nanowire heterostructures", J. Nah, K. M. Varahramyan, E.-S. Liu, A. Opatowsky, D. Ferrer, S.K. Banerjee, **E. Tutuc**, *Proc. SPIE* **7406**, 74060O (Aug. 2009). <http://dx.doi.org/10.1117/12.829159>
14. "High-k Dielectrics for Ge, III-V, and Graphene MOSFETs", S.K. Banerjee, **E. Tutuc**, S. Kim, T. Akyol, M. Jamil, D. Shahrjerdi, J. Donnelly, *ECS Trans.* **25**, (6) pp. 285-299 (Oct. 2009). <http://dx.doi.org/10.1149/1.3206627>
15. "Ge-Si_xGe_{1-x} Core-Shell Nanowire Tunneling Field-Effect Transistors", J. Nah, Y. Kim, E.-S. Liu, S.K. Banerjee, **E. Tutuc**, *68th Device Research Conference*, pp. 145-146 (June 2010). <http://dx.doi.org/10.1109/DRC.2010.5551880>

16. "Thickness dependence of carrier mobility in mono- and bi-layer graphene with HfO₂ gate dielectric", B. Fallahazad, S. Kim, L. Colombo, **E. Tutuc**, 68th Device Research Conference, pp. 81-82 (June 2010). <http://dx.doi.org/10.1109/DRC.2010.5551928>
17. "Capacitance analysis of wire-array solar cells", O. Gunawan, B. Fallahazad, **E. Tutuc**, S. Guha, IEEE 35th Photovoltaic Specialists Conference, pp. 001692-001695 (June 2010). <http://dx.doi.org/10.1109/PVSC.2010.5616084>
18. "Wire textured silicon solar cells", K. Wang, O. Gunawan, N. Moumen, G. Tulevski, H. Mohamed, B. Fallahazad, **E. Tutuc**, S. Guha, IEEE 35th Photovoltaic Specialists Conference, pp. 000913-000917 (June 2010). <http://dx.doi.org/10.1109/PVSC.2010.5614554>
19. "A Platform for Three-dimensional On-chip Photonics: Multi-bonded Silicon-On-Insulator Wafers", A. Hosseini, B. Fallahazad, D.N. Kwong, Y. Zhang, **E. Tutuc**, R.T. Chen, OSA/CLEO_SI 2011 p. CTHHH5 (May 2011). http://dx.doi.org/10.1364/CLEO_SI.2011.CThHH5
20. "Graphene Field-Effect Transistors Using Large-Area Monolayer Graphene Grown by Chemical Vapor Deposition on Co Thin Films", M.E. Ramon, A. Gupta, C. Corbet, D. A. Ferrer, H.C.P. Movva, G. Carpenter, L. Colombo, G. Bourianoff, M. Doczy, D. Akinwande, **E. Tutuc**, S.K. Banerjee, 69th Device Research Conference, pp. 123-124 (June 2011). <http://dx.doi.org/10.1109/DRC.2011.5994446>
21. "Gate capacitance scaling and graphene field-effect transistors with ultra-thin top-gate dielectrics", B. Fallahazad, K. Lee, S. Kim, C. Corbet, **E. Tutuc**, 69th Device Research Conference, pp. 35-36 (June 2011). <http://dx.doi.org/10.1109/DRC.2011.5994409>
22. "Novel double layer graphene transistors-bilayer pseudospin FETs and 2D-2D tunnel FETs", S.K. Banerjee, L.F. Register, **E. Tutuc**, D. Reddy, S. Kim, D. Basu, C. Corbet, L. Colombo, G. Carpenter, A.H. MacDonald, 70th Device Research Conference, pp. 27-28 (June 2012). <http://dx.doi.org/10.1109/DRC.2012.6256938>
23. "Graphene field-effect transistors with self-aligned spin-on-doping of source/drain access regions", H. C.P. Movva, M.E. Ramon, C.M. Corbet, F.S. Chowdhury, G. Carpenter, **E. Tutuc**, S.K. Banerjee, 70th Device Research Conference, pp. 175-176 (June 2012). <http://dx.doi.org/10.1109/DRC.2012.6256963>
24. "(Invited) Electron Transport and Strain Mapping in Ge-Si_xGe_{1-x} Core-Shell Nanowire Heterostructures", D. C. Dillen, J. Nah, K. M. Varahramyan, S. K. Banerjee, **E. Tutuc**, ECS Trans. 50, (9) pp. 681-689 (Feb. 2013). <http://dx.doi.org/10.1149/05009.0681ecst>
25. "2D silicon-based surface-normal vertical cavity photonic crystal waveguide array for high-density optical interconnects", J. Ahn, H. Subbaraman, L. Zhu, S. Chakravarty, **E. Tutuc**, R.T. Chen, Proc. SPIE 8630, 86300D (Feb. 2013). <http://dx.doi.org/10.1117/12.2009449>
26. "(Invited) Novel Graphene Devices", C.M. Corbet, M. Ramon, H.C.P. Movva, D. Reddy, S. Kang, Sk.F. Chowdhury, D. Akinwande, **E. Tutuc**, F. Register, S.K. Banerjee, ECS Transactions 58, (7) pp. 73-77 (Nov. 2013). <http://dx.doi.org/10.1149/05807.0073ecst>
27. "Interfacial-oxygen-vacancy mediated doping of MoS₂ by high-k dielectrics", A. Rai, A. Valsaraj, H.C.P. Movva, A. Roy, **E. Tutuc**, L.F. Register, S.K. Banerjee, 73th Device Research Conference, pp. 189-190 (June 2015). <http://dx.doi.org/10.1109/DRC.2015.7175626>
28. "Top-gated WSe₂ field-effect transistors with Pt contacts", H.C.P. Movva, S. Kang, K. Kim, S. Guchiat, T. Taniguchi, K. Watanabe, **E. Tutuc**, S.K. Banerjee, 73th Device Research Conference, pp. 131-132 (June 2015). <http://dx.doi.org/10.1109/DRC.2015.7175590>
29. "Gate tunable resonant tunneling in graphene-based heterostructures and device applications", **E. Tutuc**, B. Fallahazad, S. Kang, K. Lee, K. Kim, H.C.P. Movva, X. Mou, C.M. Corbet, L.F. Register, S.K. Banerjee, T. Taniguchi, K. Watanabe, 73th Device Research Conference, pp. 269-270 (June 2015). <http://dx.doi.org/10.1109/DRC.2015.7175677> (invited)
30. "(Invited) Strain and Phonon-Carrier Interactions in Ge-Si_{0.5}Ge_{0.5} Core-Shell Nanowires Probed Using Tip-Enhanced Raman Spectroscopy", E.T. Yu, Z. Zhang, D.C. Dillen, B.W. Brasile, **E. Tutuc**, ECS Transactions 69, (12) pp. 47-52 (Oct. 2015). <http://dx.doi.org/doi:10.1149/06912.0047ecst>
31. "Room temperature gate-tunable negative differential resistance in MoS₂/hBN/WSe₂ heterostructures", H.C.P. Movva, S. Kang, A. Rai, K. Kim, B. Fallahazad, T. Taniguchi, K. Watanabe, **E. Tutuc**, S.K. Banerjee, 74th Device Research Conference, pp. 1-2 (June 2016). <http://dx.doi.org/10.1109/DRC.2016.7548486>
32. "Insights into interlayer tunnel FET performance improvement: Lessons learned from graphene hexagonal boron nitride heterostructures", S. Kang, N. Prasad, H.C.P. Movva, A. Rai, K. Kim, T. Taniguchi, K. Watanabe, L.F. Register, **E. Tutuc**, S.K. Banerjee, 74th Device Research Conference, pp. 1-2 (June 2016). <http://dx.doi.org/10.1109/DRC.2016.7548442>

33. "Double bilayer graphene-WSe₂ resonant tunneling heterostructures with high interlayer current densities and peak-to-valley ratios", G. W. Burg, B. Fallahazad, K. Kim, N. Prasad, T. Taniguchi, K. Watanabe, L. F. Register, E. Tutuc, *75th Device Research Conference*, pp. 1-2 (June 2017). <http://dx.doi.org/10.1109/DRC.2017.7999393>
34. "Tip-enhanced Raman spectroscopy of semiconductor nanostructures", Z. Zhang, D. Dillen; C. J. Brennan, A. De Palma, G. Cossio, R. Ghosh, S. Banerjee, E. Tutuc, E. T. Yu, *Proc. SPIE 10350, Nanoimaging and Nanospectroscopy V*, 103500A (2017). <https://doi.org/10.1117/12.2275570>
35. "Interlayer excitons in bilayer transitional metal dichalcogenide", L. Zhang, E. Paik, J. Horng, R. Gogna, T. Chou, W. Burg, E. Tutuc, H. Deng, *Proc. SPIE 10920, 2D Photonic Materials and Devices II*, 109200L (2019). <https://doi.org/10.1117/12.2515458>
36. "RF Read-Out of Minority Carrier Lifetimes in Micro-Scale Infrared Materials", S. Dev, Y. Wang, K. Kim, M. Zamiri, C. Kadlec, M. Goldflam, S. Hawkins, E. Shaner, J. Kim, S. Krishna, M. Allen, J. Allen, E. Tutuc, D. Wasserman, *Conference on Lasers and Electro-Optics*, OSA Technical Digest (2019), paper STh4O.4. https://doi.org/10.1364/CLEO_SI.2019.STh4O.4
37. "Spatially Coherent Interlayer Exciton Lasing in an Atomically-Thin Heterostructure", E. Y. Paik, L. Zhang, G. W. Burg, R. Gogna, E. Tutuc, H. Deng, *Conference on Lasers and Electro-Optics*, OSA Technical Digest (2019), paper STu3N.5. https://doi.org/10.1364/CLEO_SI.2019.STu3N.5

C. Books, Chapters of Books

1. "Semiconductor Nanowires: Contacts and Electronic Properties", E. Tutuc, E.-S. Liu, chapter in *Nanotechnology for Photovoltaics*, edited by L. Tsakalakos, CRC Press, Taylor & Francis, New York (2010). <http://www.crcnetbase.com/isbn/9781420076752>

ORAL PRESENTATIONS:

A. CONFERENCE PRESENTATIONS (as presenting author)

American Vacuum Society Symposium, Columbus, OH, 2019

- "Rotationally Controlled van der Waals Heterostructures of 2D Materials" **(Invited)**

Flatlands Beyond Graphene 2019, Toulouse, France, 2019

- "Quantum Hall Effect and Tunneling in Transition Metal Dichalcogenide Heterostructures" **(Invited)**

Electronic Materials Conference, Ann Arbor, MI, 2019

- "Rotationally Controlled van der Waals Heterostructures: Electron Physics and Device Applications" **(Invited)**

Moiré in Paris 2019 workshop, Paris, France 2019

- "Rotationally Controlled van der Waals Heterostructures" **(Invited)**

American Physical Society, March Meeting, Boston, MA, 2019

- "Rotationally Controlled Atomic Layer Heterostructures" **(Invited)**

Graphene for US, New York City, NY, 2018

- "Graphene-based Interlayer Tunneling Field-Effect Transistors: Device Physics and Applications" **(Keynote)**

American Physical Society, March Meeting, New Orleans, LA, 2017

- "Magnetotransport of High Mobility Holes in Monolayer and Bilayer WSe₂" **(Invited)**

NanoTech 2016 Conference, Washington, DC, 2016

- "Atomic Layer Heterostructures and Device Applications" **(Invited)**

American Vacuum Society 63rd International Symposium, San Jose, CA, 2015

- "Electron Transport and Tunneling in Graphene-based Heterostructures" **(Invited)**

Science and Technology of 2D Materials Workshop, University of Central Florida, Orlando, FL, 2015

- "Electron Transport and Tunneling in Graphene-based Heterostructures" **(Invited)**

73rd Device Research Conference, Columbus, OH, 2015

- "Gate tunable resonant tunneling in graphene-based heterostructures and device applications" **(Invited)**

American Physical Society, March Meeting, San Antonio, TX, 2015

- "Chemical potential and tunneling in bilayer graphene using double bilayer graphene heterostructures" **(Invited)**

32nd International Conference on the Physics of Semiconductors, Austin, TX, 2014

- “Electron Interaction and Tunneling in Graphene-Based Heterostructures” **(Invited)**

Graphene 2014, Toulouse, France, 2014

- “Electron Interaction and Tunneling in Graphene-Based Heterostructures” **(Invited)**

International Semiconductor Device Research Symposium, Bethesda, MD, 2013

- “Electron Transport and Tunneling Field-Effect Transistors in Graphene-based Heterostructures” **(Invited)**

American Vacuum Society 60th International Symposium, Long Beach, CA, 2013

- “Graphene-based Vertical Heterostructures and Tunneling Field Effect Transistors” **(Invited)**

American Physical Society, March Meeting, Baltimore, MD, 2013

- “Coulomb Drag and Magnetotransport in Graphene Double Layers” **(Invited)**

ITRS Emergent Research Materials e-Workshop, 2012

- “Graphene devices for logic applications” **(Invited)**

Electrochemical Society 222nd Meeting, Honolulu, HI, 2012

- “Electron Transport and Strain Mapping in Ge-Si_xGe_{1-x} Core-Shell Nanowire Heterostructures” **(Invited)**

Nanowires 2012, Berlin, Germany, 2012

- “Band engineered, epitaxial Ge-Si_xGe_{1-x} core-shell nanowires: growth, electron transport, and device applications” **(Invited)**

20th International Conference on High Magnetic Fields in Semiconductor Physics, Chamonix, France, 2012

- “Magnetotransport and Coulomb drag in graphene double layers” **(Invited)**

Electrochemical Society 221st Meeting, Seattle, WA, 2012

- “Graphene Bilayers: Electron Transport and Device Applications” **(Invited)**

Nanoelectronic Devices for Defense and Security Conference, Brooklyn, NY

- “Graphene bilayers: fabrication, electron transport, and potential applications” **(Invited)**

CMOS Emerging Technologies Meeting, Whistler, BC, Canada, 2011

- “Graphene bilayers: electron transport and potential device applications” **(Invited)**

Electrochemical Society 219th Meeting, Montreal, Canada, 2011

- “Dielectric Deposition and Electron Transport in Graphene Devices with High-k Dielectrics” **(Invited)**

American Vacuum Society 57th International Symposium, Albuquerque, NM, 2010

- “Electron transport in dual-gated mono- and bilayer graphene devices with high-k dielectrics” **(Invited)**

Material Research Society Spring Meeting, San Francisco, CA, 2010

- “Epitaxial Ge-Si_xGe_{1-x} Core-shell Nanowire Heterostructures and High Performance Field Effect Transistors” **(Invited)**

SPIE Nanoscience and Engineering, San Diego, CA, 2009

- “Growth and electronic properties of Ge-SiGe core-shell nanowire heterostructures” **(Invited)**

American Physical Society March Meeting, Pittsburgh, PA, 2009:

- “Scaling Properties of High Performance Ge-Si_xGe_{1-x} Core-Shell Nanowire Field Effect Transistors” **(Invited)**

SiGe and Ge; Processing, and Devices Symposium, Honolulu, HI, 2008

- “Opportunities for group IV nanowire devices in Si CMOS technology” **(Invited)**

4th International Conference on Spontaneous Coherence in Excitonic Systems, Cambridge, UK, 2008

- “Exciton Superfluid in Two Dimensional Hole Bilayers” **(Invited)**

SPIE Optics East, Boston, MA, 2006

- “Germanium nanowire based devices” **(Invited)**

ITRS Emergent Research Materials e-Workshop, 2006

- “Nanowire doping: incorporation mechanism and modulation” **(Invited)**

64th Device Research Conference, State College, PA, 2006

- “Realization of a Ge nanowire *p-n* junction”

16th International Conference on Electronic Properties of Two-Dimensional Systems, Albuquerque, NM, 2005

- “Exciton condensation in GaAs hole bilayer at $\nu=1$ ” **(Invited)**

107th Annual Meeting of the American Ceramics Society, Baltimore, MD, 2005

- “Epitaxial Oxides and Si/Ge Heterostructures and Devices” **(Invited)**

American Physical Society March Meeting, Los Angeles, CA, 2005:

- “Counterflow conductivity of Bilayer 2D Hole Systems at Filling Factor 1” **(Invited)**

Workshop on Strongly Correlated Electronic Materials, Princeton University, NJ, 2005

- “Interacting bilayer hole systems” **(Invited)**

16th International Conference on High Magnetic Fields in Semiconductor Physics, Tallahassee, FL, 2004

- “Counterflow Measurements in GaAs Hole Bilayers: Evidence for Electron-Hole Pairing” **(Invited)**

American Physical Society March Meeting, Montreal, Canada, 2004

- “Coulomb drag and counterflow measurements in strongly correlated GaAs hole bilayers”

15th International Conference on the Electronic Properties of Two-Dimensional Systems, Nara, Japan, 2003:

- “Interacting GaAs bilayer hole systems with layer density imbalance”

American Physical Society March Meeting, Austin, TX, 2003

- “Role of density imbalance in an interacting GaAs bilayer hole system”

15th International Conference on High Magnetic Fields in Semiconductor Physics, Oxford, UK, 2002

- “Spin polarization of dilute two-dimensional carrier systems”

14th International Conference on the Electronic Properties of Two-Dimensional Systems, Prague, Czech Republic, 2001

- “Measurements of the effective g-factor in dilute GaAs 2D electrons”

10th International Conference on Modulated Semiconductor Structures, Linz, Austria, 2001

- “In-plane magnetic field induced spin polarization and transition to insulating behavior in two-dimensional hole systems”

American Physical Society March Meeting, Seattle, WA, 2001

- “In-plane magnetic field-induced spin polarization and transition to insulating behavior in two-dimensional hole systems”

B. INVITED SEMINARS

- Massachusetts Institute of Technology, Condensed Matter Physics "Chez Pierre" Seminar, Dec. 2018
- University of Washington, Department of Physics MRSEC Seminar, Oct. 2018
- University of Texas at Austin, Department of Physics Colloquium, Oct. 2018
- University of Texas at Austin, Center for Quantum Systems/Condensed Matter seminar, Jan. 2018
- Center for Integrated Nanotechnologies User Meeting, Santa Fe, NM, November 2016
- University of Arkansas, Department of Physics Colloquium, December 2015
- Chungnam National University, Korea, February 2015
- Princeton University, Princeton Center for Complex Materials Seminar, November 2013
- University of Pennsylvania Condensed Matter Seminar, September 2012
- Iberian Nanotechnology Laboratory, Braga, Portugal, February 2012
- Caltech University - Condensed Matter Physics Seminar, February 2012
- Indiana University Purdue University Indianapolis - Physics Department Colloquium, December 2011
- Institute for Defense and Government Advancement, 7th Military Antennas, March 2011
- Princeton University, January 2011
- Los Alamos National Laboratory, Los Alamos, October 2010
- Sandia National Laboratories, Albuquerque, August 2010
- University of Texas at Austin, CNM/TMI seminar, March 2010
- University of Texas at Austin, Physics Department, November 2009
- Princeton University, Physics Department, January 2009
- Neel Institute - CNRS, Grenoble, December 2008
- Graphene Day Workshop, University of Texas at Austin, October 2008
- Texas Instruments, October 2008
- University of Texas at Dallas, Electrical and Computer Engineering, October 2008

- Rice University, Physics Department, January 2008
- Arizona State University, November 2007
- Rice University, Richard E Smalley Institute, October 2007
- Carnegie Mellon University – University of Pittsburgh Physics Colloquium, April 2007
- University of Texas, Department of Physics, March 2007
- IBM Research, Silicon Technology Department Seminar, June 2006
- Princeton University, Department of Electrical Engineering, May 2006
- Center for Integrated Nanotechnologies, Sandia National Laboratories, May 2006
- University of Texas at Austin, April 2006
- IBM Research, Physical Sciences Department Seminar, March 2005

PATENTS:

1. "Ultra-sensitive detection techniques", US Patent 7,888,753.
2. "Core-shell nanowire transistor", US Patent 7,948,050.
3. "Techniques for use of nanotechnology in photovoltaics", US Patent 7,977,690.
4. "Techniques for use of nanotechnology in photovoltaics", US Patent 7,998,788.
5. "Ultra-sensitive detection techniques", US Patent 8,026,560.
6. "Method of placing a semiconductor nanostructure and semiconductor device including the semiconductor nanostructure", US Patent 8,138,102.
7. "Bi-layer Pseudo-Spin Field-Effect Transistor", US Patent 8,188,460.
8. "Establishing a uniformly thin dielectric layer on graphene in a semiconductor device without affecting the properties of graphene", US Patent 8,198,707.
9. "Bi-layer Pseudo-Spin Field-Effect Transistor", US Patent 8,263,967.
10. "Semiconductor nanostructures, semiconductor devices, and methods of making same", US Patent 8,362,582.
11. "Method of placing a semiconductor nanostructure and semiconductor device including the semiconductor nanostructure", US Patent 8,604,559.
12. "Semiconductor nanostructures, semiconductor devices, and methods of making same", US Patent 8,637,361.
13. "Semiconductor nanostructures, semiconductor devices, and methods of making same", US Patent 8,765,539.
14. "Semiconductor nanostructures, semiconductor devices, and methods of making same", US Patent 8,835,238.
15. "Transistor that employs collective magnetic effects thereby providing improved energy efficiency", US Patent 9,825,218.

PH.D. SUPERVISIONS COMPLETED:

Kim, Kyoungwan	2018	Electrical and Computer Engineering	Univ. of Texas at Austin
Movva, Hema C.P. (co-advised with Prof. Sanjay Banerjee)	2018	Electrical and Computer Engineering	Univ. of Texas at Austin
Larentis, Stefano	2018	Electrical and Computer Engineering	Univ. of Texas at Austin
Corbet, Christopher M. (co-advised with Prof. Sanjay Banerjee)	2016	Electrical and Computer Engineering	Univ. of Texas at Austin
Lee, Kayoung	2016	Electrical and Computer Engineering	Univ. of Texas at Austin
Dillen, David C.	2015	Electrical and Computer Engineering	Univ. of Texas at Austin
Fallahazad, Babak	2015	Electrical and Computer Engineering	Univ. of Texas at Austin
Liu, En-Shao	2015	Electrical and Computer Engineering	Univ. of Texas at Austin
Kim, Seyoung (co-advised with Prof. Sanjay Banerjee)	2012	Electrical and Computer Engineering	Univ. of Texas at Austin
Nah, Junghyo	2010	Electrical and Computer Engineering	Univ. of Texas at Austin

M.S. SUPERVISIONS COMPLETED:

Points, Micah S	2013	Electrical and Computer Engineering	Univ. of Texas at Austin
Lee, Kayoung	2012	Electrical and Computer Engineering	Univ. of Texas at Austin
Dillen, David C.	2011	Electrical and Computer Engineering	Univ. of Texas at Austin
Liu, En-Shao	2008	Electrical and Computer Engineering	Univ. of Texas at Austin
Jain, Nitesh	2008	Electrical and Computer Engineering	Univ. of Texas at Austin
Varahramyan, Kamran (co-advised with Prof. Sanjay Banerjee)	2008	Electrical and Computer Engineering	Univ. of Texas at Austin
Kim, Seyoung (co-advised with Prof. Sanjay Banerjee)	2008	Electrical and Computer Engineering	Univ. of Texas at Austin

PH.D. SUPERVISIONS IN PROGRESS:

Wen, Feng
Burg, Will
Wang, Yimeng
Yoon, Wooyoung

Emanuel Tutuc received the B.S. and M.S. degrees from Ecole Normale Supérieure, The University of Paris, France in 1997 and 1998, and the Ph.D. degrees in 2004 from Princeton University, in Physics. Between 2004 and 2006, he was a post-doctoral research at I.B.M. T.J. Watson Research Center, Yorktown Heights, NY. He is currently a Professor of Electrical and Computer Engineering at the University of Texas at Austin. His research interests are the growth and electronic properties of semiconductors, electronic properties of quantum confined systems, novel semiconductor materials, and their application to electronic devices. Prof. Tutuc is a Fellow of the American Physical Society, a recipient of a 2009 NSF CAREER Award, a 2008 DARPA Young Faculty Award, and the Charlotte Elizabeth Procter Fellowship at Princeton University.