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EDUCATION

Cornell University	Post Doctoral Associate	9/2005 – 8/2006
Cornell University	B.A. – Biology	May 1999
Cornell University	Ph.D. – Microbiology	October 2005

EMPLOYMENT & PROFESSIONAL POSITIONS

CNSE, University at Albany	Empire Innovation Professor	8/2023 – Present
CNSE, University at Albany	Associate Dean for Research	8/2023 - Present
SUNY Polytechnic Institute	Interim Vice President of Research	5/2022 – 8/2023
SUNY Applied Materials Research Institute	Executive Director	5/2019 – 8/2023
SUNY Polytechnic Institute	Empire Innovation Professor	5/2019 – 8/2023
SUNY Polytechnic Institute	Professor	5/2018 – 5/2019
SUNY Polytechnic Institute	Associate Professor	7/2014 – 4/2018
CNSE, University at Albany	Associate Professor	9/2012 – 7/2014
CNSE, University at Albany	Assistant Professor	8/2006 – 8/2012
Illuminaria, LLC	Groton, NY *co-Founder*	2004 - 2006

HONORS AND AWARDS

University at Albany Excellence in Research Leadership Award	2023
Empire Innovation Professorship Award	2019
SUNY Chancellor's Award for Excellence in Scholarship & Creative Activities	2018
CNSE Excellence in Teaching "Hermes" Award	2013, 2015, 2019, 2022
SUNY Research Foundation Rising Star Award	2008
W.M. Keck Fellowship in Nanotechnology	2002-2004
Phi Beta Kappa	1999

PROFESSIONAL SOCIETY MEMBERSHIPS

IEEE	2018 – Present
American Vacuum Society	2018 – Present
Materials Research Society	2008 – Present
American Society for Microbiology	2003 – Present

PUBLICATIONS & PATENTS

Peer-reviewed Journal and Proceedings Publications

Google Scholar link: https://scholar.google.com/citations?user=MLB4R1EAAAAJ&hl=en

1. N. Kumar, J. E. Han, K. Beckmann, **N. Cady**, G. Sambandamurthy. Noise Spectroscopy and Electrical Transport In NbO2 Memristors with Dual Resistive Switching. (2025) *Advanced Electronic Materials*, 2400877. https://doi.org/10.1002/aelm.202400877
2. T. Mburu, Z.R. Robinson, K. Beckmann, U. Lamba, A. Powell, **N. Cady**, M.C. Sullivan. Enhancement in neuromorphic NbO_2 threshold switching at cryogenic temperatures. (2024) *Journal of Vacuum Science & Technology, B.* 42 (6): 063210. https://doi.org/10.1116/6.0004060
3. I. Aravind, Y. Wang, Z. Cai, R. Li, R. Shahriar, G.N. Gibson, E. Guignon, **N.C. Cady**, W.D. Page, A. Pilar, S.B. Cronin. Voltage-induced modulation of interfacial ionic liquids measured using surface plasmon resonant grating nanostructures. (2024) *Journal of Chemical Physics.*161 (3): 034702. 2024 https://doi.org/10.1063/5.0202642
4. Z.R. Robinson, K. Beckmann, J. Michels, V. Daviero, E.A. Street, F. Lorenzen, M.C. Sullivan, **N. Cady**, A.C. Kozen, J.M. Woodward, M.Currie. Measurement of the crystallization and phase transition of niobium dioxide thin-films using a tube furnace optical transmission system. (2024) *AIP Advances.* 14 (11): 115113. https://doi.org/10.1063/5.0228400
5. J. Solanki, J. Pelton, R. Febbo, M. Liehr, A. DeCandia, K. Beckmann, G. Rose. **N.C. Cady.** In-Memory Computation Using CMOS-Integrated Resistive RAM for Robotic Navigation. (2024) International Conference on Neuromorphic Systems (ICONS), Arlington, VA, USA, 2024, pp. 217-223, https://doi.org/10.1109/ICONS62911.2024.00038
6. R. Mathkari, M. Liehr, P. Ravindra, R. Pareis, K. Beckmann, N. Tokranova, S. Schujman, I. Saraf, O. V.d.Straten, N. Gong, T. Ando, **N. Cady.** Investigation of the Effect of Oxygen Partial Pressure During Reactive Sputtering of Tantalum Oxide Resistive Random Access Memory Switching Layer. (2024) *Materials Science in Semiconductor Processing.* 186: 109060. https://doi.org/10.1016/j.mssp.2024.109060
7. J. Li, A. Appachar, S.L. Peczonczyk, E.T. Harrison, A.V. Ievlev, R. Hood, D. Shin, S. Yoo, B. Roest, K. Sun, K. Beckmann, O. Popova, T. Chiang, W.S. Wahby, R.B. Jacobs-Godrim, M.J. Marinella, P. Maksymovych, J.T. Heron, **N. Cady**, W.D. Lu, S. Kumar, A. A. Talin, W. Sun, Y. Li. Thermodynamic origin of nonvolatility in resistive memory (2024) *Matter, Accepted, online publication.* https://doi.org/10.1016/j.matt.2024.07.018
8. P. Ravindra, M. Liehr, R. Mathkari, K. Beckmann, N. Tokranova, **N.C. Cady.** Optimization of the position of TaOx:N-based barrier layer in TaOx RRAM devices. (2024) *Frontiers in Materials.* Vol. 11 (published online) https://doi.org/10.3389/fmats.2024.1343076
9. M.R. Bryan, J.N. Butt, Z. Ding, N. Tokranova, **N. Cady**, B. Piorek, C. Meinhart, J. Tice, and B.L. Miller. A Multiplex "Disposable Photonics" Biosensor Platform and Its Application to Antibody Profiling in Upper Respiratory Disease. (2024) *ACS Sensors*. 9 (4), 1799-1808. https://doi.org/10.1021/acssensors.3c02225
10. S. Sihn, W. L. Chambers, M. Abedin, K. Beckmann, **N. Cady**, S. Ganguli, A. K. Roy, Enhanced Computational Study with Experimental Correlation on I–V Characteristics of Tantalum Oxide (TaOx) Memristor Devices in a 1T1R Configuration. (2024) *Small.* 2310542. https://doi.org/10.1002/smll.202310542
11. D. Shin, A.V. Ievlev, K. Beckmann, J. Li, P. Ren, **N. Cady** and Y. Li. Oxygen tracer diffusion in amorphous hafnia films for resistive memory. (2024) *Materials Horizons.* Online publication (open access). https://doi.org/10.1039/D3MH02113K

12. B. Taubner, J. Pelton, D.K. Das, A. Pilar, W. Page, E.F. Guignon, G. Gibson, **N.C. Cady**. A rapid fluorescent plasmonic biosensor platform to diagnose Lyme disease from serum antibodies. (2024) Proceedings of the SPIE 12861, Frontiers in Biological Detection: From Nanosensors to Systems XVI, 128610C. https://doi.org/10.1117/12.3002668
13. F.P. Torres, N. Tokranova, E. Amodeo, T. Bertucci, T.R. Kiehl, Y. Xie, **N.C. Cady**, S.T. Sharfstein. Interfacing neural cells with typical microelectronics materials for future manufacturing. (2023). *Biosensors and Bioelectronics.* 242, 115749. https://doi.org/10.1016/j.bios.2023.115749
14. M. Abedin, N. Gong, K. Beckmann, M. Liehr, I. Saraf, O. Van der Straten, T. Ando, **N. Cady.** Material to system-level benchmarking of CMOS-integrated RRAM with ultra-fast switching for low power on-chip learning. (2023) *Nature Scientific Reports.* 13, 14963. https://doi.org/10.1038/s41598-023-42214-x
15. M. Liehr, P. Ravindra, K. Beckmann, **N. Cady**. Investigating Device Degradation and Revival in Resistive Random Access Memory. (2023) Proceedings of the 2023 IEEE International Integrated Reliability Workshop (IIRW), South Lake Tahoe, CA, USA, 2023, pp. 1-6, https://doi.org/10.1109/IIRW59383.2023.10477642
16. F. Zhang, W. He, I. Yeo, M. Liehr, **N. Cady,** Y. Cao, J-S. Seo, D. Fan. A 65nm RRAM Compute-in-Memory Macro for Genome Sequencing Alignment. (2023) ESSCIRC 2023- IEEE 49th European Solid State Circuits Conference (ESSCIRC), Lisbon, Portugal, 2023, pp. 117-120. https://doi.org/10.1109/ESSCIRC59616.2023.10268783
17. Z. Wang, P.S. Nalla, G. Krishnan, R.V. Joshi, **N.C. Cady,** D. Fan, J-S. Seo, Y. Cao. Digital-Assisted Analog In-Memory Computing with RRAM Devices. (2023) 2023 International VLSI Symposium on Technology, Systems and Applications (VLSI-TSA/VLSI-DAT), HsinChu, Taiwan, 2023, pp. 1-4. https://doi.org/10.1109/VLSI-TSA/VLSI-DAT57221.2023.10134272
18. S. Alam, M.M. Islam, J. Hutchins, **N. Cady,** S.K. Gupta, G. Rose, A. Aziz. Design Space Exploration for Threshold Switch Assisted Memristive Memory. (2023) IEEE Transactions on Nanotechnology, vol. 22, pp. 457-465. https://doi.org/10.1109/TNANO.2023.3305931
19. Z. Woods, **N. Cady,** M. Liehr, P. Kumar, K. Beckmann and K. Amponsah. Flow-Based Computing of NOR Logic Using ReRAM Devices (2023) IEEE 32nd Microelectronics Design & Test Symposium (MDTS), Albany, NY, USA, 2023, pp. 1-6. https://doi.org/10.1109/MDTS58049.2023.10168046
20. M. Liehr, M. Abedin, K. Beckmann, **N. Cady**. Analog NVM Synapse for Hardware-Aware Neural Network Training Optimization on 65nm CMOS TaO_x ReRAM Devices (2023) IEEE 32nd Microelectronics Design & Test Symposium (MDTS), Albany, NY, USA, 2023, pp. 1-9, https://doi.org/10.1109/MDTS58049.2023.10168155
21. J. Solanki, K. Beckmann, J. Pelton, **N. Cady**, M. Liehr. Effect of Resistance variability in Vector Matrix Multiplication operations of 1T1R ReRAM crossbar arrays using an Embedded test platform (2023) IEEE 32nd Microelectronics Design & Test Symposium (MDTS), Albany, NY, USA, 2023, pp. 1-5, https://doi.org/10.1109/MDTS58049.2023.10168152
22. B. Taubner, J. Pelton, R. Utama, F. Doyle, D.K. Das, **N.C. Cady**. Application of machine learning methods for the diagnosis of Lyme disease with a fluorescent plasmonic biosensor (2023) IEEE 32nd Microelectronics Design & Test Symposium (MDTS), Albany, NY, USA, 2023, pp. 1-5, https://doi.org/10.1109/MDTS58049.2023.10168153

23. H. Das, R.D. Febbo, S.N.B. Tushar, N.N. Chakraborty, M. Liehr, **N.C. Cady,** G.S. Rose. An Efficient and Accurate Memristive Memory for Array-Based Spiking Neural Networks (2023) *IEEE Transactions on Circuits and Systems I: Regular Papers,* 4804 – 4815. https://doi.org/10.1109/TCSI.2023.3301020

24. H. Das, M. Rathore, R. Febbo, M. Liehr, **N.C. Cady**, G.S. Rose. RFAM: RESET-Failure-Aware-Model for HfO2-based Memristor to Enhance the Reliability of Neuromorphic Design. (2023) *Proceedings of the Great Lakes Symposium on VLSI 2023 (GLSVLSI '23). Association for Computing Machinery, New York, NY, USA,* 281–286. https://doi.org/10.1145/3583781.3590211

25. H. Gong, R. Ume, V. Tokranov, M. Yakimov, K. Brew, G. Cohen, S. Schujman, K. Beckmann, **N. Cady,** S. Oktyabrsky. Three Programming States in Bilayer Ga–Sb Phase Change Memory With AlOx Diffusion Barrier (2023) *IEEE Transactions on Electron Devices. Early publication online.* https://doi.org/10.1109/TED.2023.3275117.

26. K. J. Bai, D. Titcombe, J. Lombardi, C. Thiem, **N.C. Cady**. Moving Towards Game-Changing Technology: Fabrication and Application of HfO2 RRAM for In-Memory Computing. (2023) *24th International Symposium on Quality Electronic Design (ISQED), San Francisco, CA, USA*, pp. 1-7, https://doi.org/10.1109/ISQED57927.2023.10129352

27. M. Liehr, J. Hazra, K. Beckmann, V. Mukundan, I. Alexandrou, T. Yeow, J. Race, K. Tapily, S Consiglio, S.K. Kurinec, A.C. Diebold, **N. Cady**. Implementation of high-performance and high-yield nanoscale hafnium zirconium oxide based ferroelectric tunnel junction devices on 300 mm wafer platform (2023) *Journal of Vacuum Science & Technology B* 41, 012805. https://doi.org/10.1116/6.0002097

28. M. Rathore, R.J. Weiss, M.S.A. Shawkat, G. Rose, M. Liehr, M. Abedin, S. Rafiq, **N.C. Cady**. A Compact Model for the Variable Switching Dynamics of HfO2 Memristors. *2022 IEEE 65th International Midwest Symposium on Circuits and Systems (MWSCAS)*, Fukuoka, Japan, 2022, pp. 1-4, https://doi.org/10.1109/MWSCAS54063.2022.9859469

29. M. Liehr, J. Hazra, K. Beckmann, **N. Cady**. Failure Analysis of 65nm CMOS Integrated Nanoscale ReRAM Devices on a 300mm Wafer Platform. (2022) *IEEE International Integrated Reliability Workshop (IIRW), South Lake Tahoe, CA, USA*, p.1-7, https://doi.org/10.1109/IIRW56459.2022.10032747

30. M.C. Sullivan, Z.R. Robinson, K. Beckmann, A. Powell, T. Mburu, K. Pittman, **N. Cady.** Threshold switching stabilization of NbO2 films via nanoscale devices. (2022) *Journal of Vacuum Science & Technology B.* 40, 063202. https://doi.org/10.1116/6.0002129

31. J. Hutchins, S. Alam, A. Zeumault, K. Beckmann, **N. Cady**, G. Rose, A. Aziz. A Generalized Workflow for Creating Machine Learning-Powered Compact Models for Multi-state Devices (2022) *IEEE Access* 10: 115513-115519. https://doi.org/10.1109/ACCESS.2022.3218333

32. G. Krishnan, Z. Wang, L. Yang, J. Meng, M. Liehr, R.V. Joshi, **N.C. Cady**, D. Fan, J-S. Seo, Y. Cao. Hybrid RRAM/SRAM in-Memory Computing for Robust DNN Acceleration (2022) *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems* 41(11): 4241-4252. https://doi.org/10.1109/TCAD.2022.3197516

33. M. Abedin, A. Roohi, M. Liehr, **N. Cady**, S. Angizi, MR-PIPA: An Integrated Multi-level RRAM (HfOx) based Processing-In-Pixel Accelerator. (2022) *IEEE Journal on Exploratory Solid-State Computational Devices and Circuits. Online Publication* https://doi.org/10.1109/JXCDC.2022.3210509

34. N. Tokranova, **N. Cady**, A. Lampher and I. A. Levitsky. Highly Sensitive Fentanyl Detection Based on Nanoporous Electrochemical Immunosensors. (2022) *IEEE Sensors Journal. Online Publication*. 22(21): 20165-20170. https://doi.org/10.1109/JSEN.2022.3200591

35. B. Taubner, A. Gibbons, **N.C. Cady**. Dual detection of COVID-19 antigens and antibodies using nanoscale fluorescent plasmonic substrates. (2022) *Experimental Biology and Medicine. Online publication.* https://doi.org/10.1177/15353702221113860

36. B.L. Miller, A.M. Klose, M.R. Bryan, J.S. Cognetti, D.J. Steiner, N.Tokranova, B. Piorek, N. Judy, M. Abedin, E. Young, C. Meinhart, R. Jakubowicz, H. Warren, **N.C. Cady**. (2022) Strategies for the development of photonic sensors for COVID-19. *Proceedings of SPIE 11951, Design and Quality for Biomedical Technologies XV*. 1195104. https://doi.org/10.1117/12.2616682

37. R. Ume, H. Gong, V. Tokranov, M. Yakimov, K. Brew, G. Cohen, C. Lavoie, S. Schujman, J. Liu, A.I. Frenkel, K. Beckmann, **N. Cady**, S. Oktyabrsky. Electrical and structural properties of binary Ga–Sb phase change memory alloys. (2022) *Journal of Applied Physics.* 132, 035103 https://doi.org/10.1063/5.0096022

38. S. Rafiq, M. Abedin, K. Beckmann and **N. C. Cady,** Detecting Temporal Correlation on HfO2 Based RRAM on 65nm CMOS Technology. (2022) *2022 IEEE 31st Microelectronics Design & Test Symposium (MDTS)* p. 1-6, https://doi.org/10.1109/MDTS54894.2022.9826965 .

39. M. Liehr, K. Beckmann, **N. Cady**. Impact of Switching Variability, Memory Window, and Temperature on Vector Matrix Operations Using 65nm CMOS Integrated Hafnium Dioxide-based ReRAM Devices. (2022) *IEEE 31st Microelectronics Design & Test Symposium (MDTS), 2022*. https://doi.org/10.1109/MDTS54894.2022.9826924

40. G. Krishnan, L. Yang, J. Sun, J. Hazra, X. Du, M. Liehr, Z. Li, K. Beckmann, R. Joshi, **N.C. Cady**, D. Fan, Y. Cao. Exploring Model Stability of Deep Neural Networks for Reliable RRAM-based In-Memory Acceleration. (2022) *IEEE Transactions on Computers*, https://doi.org/10.1109/TC.2022.3174585

41. T. Head, **N.C. Cady.** Monitoring and modulation of the tumor microenvironment for enhanced cancer modeling. (2022) *Journal of Experimental Biology and Medicine.* 247(7): 598-613. https://doi.org/10.1177/15353702221074293

42. E.H. Ledet, S.M. Caparaso, K.P. Cole , M. Stout, B. Liddle, **N.C. Cady**, M.T. Archdeacon. Smart Fracture Plate for Quantifying Fracture Healing: Preliminary Efficacy in a Biomechanical Model. (2022) *Journal of Orthopaedic Research*. 40: 2414-2420. https://doi.org/10.1002/jor.25254

43. J.N. Rosenberg, **N.C. Cady.** Surveilling cellular vital signs: toward label-free biosensors and real-time viability assays for bioprocessing. (2021) *Current Opinion in Biotechnology*. 71: 123-129. https://doi.org/10.1016/j.copbio.2021.07.004

44. M. Abedin, M. Liehr, K. Beckmann, J. Hazra, S. Rafiq, **N. C. Cady**. In-memory Computation of Error-Correcting Codes Using a Reconfigurable HfOx ReRAM 1T1R Array. (2021) *2021 IEEE International Midwest Symposium on Circuits and Systems (MWSCAS)*. p. 593-598, doi: https://doi.org/10.1109/MWSCAS47672.2021.9531717

45. A. Joseph, J. Wu, K. Yu, L. Jiang, **N. Cady**, B. Si, Function-on-Function Regression for Trajectory Prediction of Small-Scale Particles towards Next-generation Neuromorphic Computing. (2021) *2021 IEEE 17th International Conference on Automation Science and Engineering (CASE)*. p.1997-2002. doi: 10.1109/CASE49439.2021.9551532 .

46. B. Taubner, R. Peredo-Wende, A. Ramani, G. Singh, K. Strle, **N.C. Cady**. Rapid and Quantitative Detection of Human Antibodies Against the 2019 Novel Coronavirus SARS CoV2 and its Variants as a Result of Vaccination and Infection. (2021) *Microbiology Spectrum.* 9(2): e00890-21. https://doi.org/10.1128/Spectrum.00890-21

47. T. Head, N. Tokranova, **N.C. Cady**. Micro-nozzle Integration for Controlled Drug Delivery via a Microfluidic Imaging Window. (2021) *MRS Communications. Online publication* https://doi.org/10.1557/s43579-021-00078-0

48. J.S. Cognetti, D.J. Steiner, M. Abedin, M.R. Bryan, C. Shanahan, N. Tokranova, E. Young, A.M. Klose, A. Zavriyev, N. Judy, B. Piorek, C. Meinhart, R. Jakubowicz, H. Warren, N.C. Cady, B.L. Miller. Disposable photonics for cost-effective clinical bioassays: application to COVID-19 antibody testing. (2021) *Lab on a Chip.* 21: 2913-2921 https://doi.org/10.1039/D1LC00369K

49. G. Krishnan, J. Sun, J. Hazra, X. Du, M. Liehr, Z. Li, K. Beckmann, R. Joshi, **N. Cady**, Y. Cao. Robust RRAM-based In-Memory Computing in Light of Model Stability. (2021) 2021 IEEE International Reliability Physics Symposium (IRPS), 2021. p. 1-5, doi: https://doi.org/10.1109/IRPS46558.2021.9405092

50. R. Ume, H. Gong, V. Tokranov, M. Yakimov, D. Sadana, K. Brew, G. Cohen, C. Lavoie, S. Schujman, K. Beckmann, **N. Cady**, S. Oktyabrsky. Crystallization Properties of Al-Sb Alloys for Phase Change Memory Applications. (2021). *ECS Journal of Solid State Science and Technology.* 10(7): 075008. https://iopscience.iop.org/article/10.1149/2162-8777/ac14dd/meta

51. G. Krishnan, J. Hazra, M. Liehr, X. Du, K. Beckmann, R. Joshi, **N. Cady,** Y. Cao. Design Limits of In-Memory Computing: Beyond the Crossbar. (2021) 2021 5th IEEE Electron Devices Technology & Manufacturing Conference (EDTM). pp. 1-3. https://doi.org/10.1109/EDTM50988.2021.9421057

52. H. Gong, R. Ume, V. Tokranov, M. Yakimov, D. Sadana, K. Brew, G. Cohen, S. Schujman, K. Beckmann, **N. Cady,** S. Oktyabrsky. Bilayer Ga-Sb Phase Change Memory with Intermediate Resistance State. (2021) *2021 Device Research Conference (DRC)*. 1-2. https://ieeexplore.ieee.org/abstract/document/9467153

53. V. Mukundan, S. Consiglio, D.H. Triyoso, K. Tapily, M.E. McBriarty, S. Schujman, K. Beckmann, J. Hazra, V. Kaushik, **N. Cady**, R.D. Clark, G.J. Leusink, A.C. Diebold, Ferroelectric Phase Content in 7 nm Hf(1-x)ZrxO2 Thin Films Determined by X-ray based Methods. (2021) *Physica Status Solidi A – Applications and Materials Science*. 218(10): 2100024 https://doi.org/10.1002/pssa.202100024

54. J. Hazra, M. Liehr, K. Beckmann, M. Abedin, S. Rafiq, **N.C. Cady.** Optimization of Switching Metrics for CMOS Integrated HfO_2 based Bipolar RRAM Devices on 300 mm Wafer Platform. (2021) *IEEE International Memory Workshop (IMW) 2021*. 1-4. DOI: 10.1109/IMW51353.2021.9439618

55. E. Chou, A. Minor, **N.C. Cady.** Quantitative multiplexed strategies for human Lyme disease serological testing. (2021) Experimental Biology and Medicine. (2021). *Journal of Experimental Biology & Medicine.* 246(12) 1388-1399. https://doi:10.1177/15353702211003496S

56. Rafiq, J. Hazra, M. Liehr, K. Beckmann, M. Abedin, J.S. Pannu, S.K. Jha, **N.C. Cady.** Investigation of ReRAM variability on flow-based edge detection computing using HfO_2-based ReRAM arrays. (2021) *IEEE Transactions on Circuits and Systems.* https://doi.org/10.1109/TCSI.2021.3072210

57. I. Aravind, Y. Wang, Z. Cai, L. Shen, B. Zhao, S. Yang, Y. Wang, J.M. Dawlaty, G.N. Gibson, E. Guignon, **N.C. Cady**, W.D. Page, A. Pilar, S.B. Cronin. Hot Electron Plasmon-Resonant Grating Structures for Enhanced Photochemistry: A Theoretical Study. (2021) *Crystals.* 11:118. https://doi.org/10.3390/cryst11020118

58. **N.C. Cady,** N. Tokranova, A. Minor, N. Nikvand, K. Strle, W.T. Lee, W. Page, E. Guignon, A. Pilar, and G.N. Gibson. Multiplexed Detection and Quantification of Human Antibody Response to COVID-19 Infection Using a Plasmon Enhanced Biosensor Platform. (2021) *Biosensors & Bioelectronics.* 171:112679. https://doi.org/10.1016/j.bios.2020.112679

59. W. Olin-Ammentorp, K. Beckmann, C.D. Schuman, J.S. Plank, **N.C. Cady.** Stochasticity and Robustness in Spiking Neural Networks. (2021) *Elsevier Journal of Neural Networks.* 419:1. https://doi.org/10.1016/j.neucom.2020.07.105

60. I. Mahaboob, R.J. Reinertsen, B. McEwen, E. Rocco, K. Hogan, A.J. Melendez, **N.C. Cady**, F. Shahedipour-Sandvik. Boronate Probe-Based Hydrogen Peroxide Detection with an AlGaN/GaN HEMT Sensor. (2021) *Journal of Experimental Biology & Medicine.* 246(5): 523-528. https://journals.sagepub.com/doi/10.1177/1535370220972030

61. M. Liehr, J. Hazra, K. Beckmann, S. Rafiq and **N. Cady.** Impact of Switching Variability of 65nm CMOS Integrated Hafnium Dioxide-based ReRAM Devices on Distinct Level Operations (2020) *2020 IEEE International Integrated Reliability Workshop (IIRW)*, South Lake Tahoe, CA, pp. 1-4, https://doi.org/10.1109/IIRW49815.2020.9312855

62. J. Hazra, M. Liehr, K. Beckmann, S. Rafiq and N. Cady, Impact of Atomic Layer Deposition Co-Reactant Pulse Time on 65nm CMOS Integrated Hafnium Dioxide-based Nanoscale RRAM Devices. (2020) *2020 IEEE International Integrated Reliability Workshop (IIRW)*, South Lake Tahoe, CA, pp. 1-4, https://doi.org/10.1109/IIRW49815.2020.9312877

63. S. Rafiq, K. Beckmann, **N.C. Cady.** Simulation of Temporal Correlation Detection using HfO_2-Based ReRAM Arrays. Proceedings of the IEEE Student Conference on Research and Development (SCOReD). (2020) Batu Pahat, Johor, Malaysia, 2020, pp. 1-3, https://doi.org/10.1109/SCOReD50371.2020.9250970

64. G. Charan, J. Hazra, K. Beckmann, X. Du, G. Krishnan, R.V. Joshi, **N.C. Cady**, Y. Cao. Accurate Inference with Inaccurate RRAM Devices: Statistical Data, Model Transfer, and On-line Adaptation. 2020 57th ACM/IEEE Design Automation Conference (DAC), San Francisco, CA, USA, 2020, pp. 1-6, https://doi.org/10.1109/DAC18072.2020.9218605

65. E.C. Graham, **N.C. Cady,** N.M. Fahrenkopf. Isotropic grating coupler for 3D silicon photonic architectures. (2020) *Proceedings of the SPIE - Optical Manufacturing and Testing XIII*. 114870A. https://doi.org/10.1117/12.2568280

66. A.C. Diebold, **N.C. Cady.** Metrology for advanced transistor and memristor devices and materials. (2020) *Proceedings of the SPIE - Metrology, Inspection, and Process Control for Microlithography XXXIV*, 1132502. https://doi.org/10.1117/12.2554477

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Book Chapters

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Patents / Intellectual Property Disclosures

1. "Defect density manipulation of a dielectric layer in semiconductor fabrication in an atomic layer deposition chamber." U.S. patent application filed 12/12/2023: 18/536,787.
2. "Optimization of the position of TaOx:N-based barrier layer in TaOx RRAM devices." U.S. Provisional Patent Application Filed 11/22/23: US 63/602,024.
3. "Methods for resistive RAM (ReRAM) performance stabilization via dry etch clean treatment" U.S. Patent US11637242B2. 4/25/2023

4. "Diagnostic photonic biosensor methods, apparatus and system." U.S. Patent Application 63/143,452. Filing date 1/1/2021. (PCT – European EP4285104A1)
5. "Methods for quantitative analysis of one or more biomarkers" N.C. Cady: U.S. Patent Application US20220034896A1, Filing date 7/6/2021
6. "Resistive random access memory device." PCT/US2019/052339. Filing date 9/23/2019.
7. "Selector devices for a memory cell." US11737286B2. 8/22/2023.
8. "Hardware based random number generator." U.S. Patent 8,680,906 B1, 3/25/2014.
9. "Polymeric Micro-Cantilevers for Ultra-Low Volume Fluid and Living Cell Deposition." U.S. Patent 8,539,905 B2, 9/24/2013.
10. "Ion Bombardment Synthesis of Transition Metal Oxide-Based Memory Devices." U.S. Patent Application, Filed 8/23/2011: US Serial No. 61/526537.
11. "Real-time detection of microorganisms using an integrated microfluidics platform." U.S. Patent Application Filed 7/22/2005: US 2008/0125330 A1
12. "Diffraction-based cell detection using a micro-contact-printed antibody grating." U.S. Patent Application Filed 1/27/2000: US 2002/0037593 A1

RESEARCH FUNDING

Total federally-funded awards:	$28,142,513
Other awards:	$2,745,504
Total funding to-date:	**$30,888,017**

Federal Funding

These federally-funded awards are the result of a competitive peer-review process by each agency.

Title	Dates	Agency	Role	Amount
FuSe2 Topic 3: Energy-Efficient Nanoelectronics Based on CMOS-Compatible Magnetoelectric Transistors	9/2024-8/2027	NSF	co-PI	197,436
Northeast AFRL Regional Research Convergence Hub (NE Hub)	10/2023 - 1/2025	AFRL	PI	150,000
Northeast Regional Defense Technology Hub (NORDTECH) MicroElectronics Commons (ME Commons) Hub	11/2023-2/2028	Department of Defense	PI	8,483,416
Collaborative Research: FMitF: Track I: Synthesis and Verification of In-Memory Computing Systems using Formal Methods	10/2023-8/2027	NSF	PI	250,000
Fabrication of an adaptable neuromorphic system for exploring nanoelectronic options	9/2021 – 5/2025	AFRL	PI	5,570,307

AIM Photonics Point of Care Sensors for Coronavirus Response	3/2022-8/2024	NIST	co-I (AIM Photonics)	399,999
Highly-sensitive, rapid and low cost plasmonic assay platform for Lyme disease diagnosis	8/2022-7/2024	NIH	Co-I (Ciencia, Inc. as lead)	75,000
Planning Grant: Engineering Research Center for Micro Ferroelectronics for Devices and Systems: microFeDS	8/2021-12-2023	NSF	co-PI	12,000
FMSG: Bio-Manufacturing of Hybrid Tissue-Electronic and Photonic Devices	09/15/21 – 08/31/23	NSF	Co-I	500,000
Planning Grant: Engineering Research Center for Micro Ferroelectrics for Devices and Systems: microFeDS	8/2021 – 7/2023	NSF	Co-PI	12,000
Genesis: A neuromorphic chip with lifelong learning on-device	9/2020 – 3/2023	AFRL	Sub contract	170,000
Wearable sensor for opioids detection based on electrochemical sensor array integrated wit Bluetooth device	9/2020 – 8/2021	NIH / NIDA	Sub contract	30,000
Memristor-CMOS Analog Co-Processor for Efficient Computation of PDEs	8/2019 – 3/2020	US Department of the Interior	Co-PI	200,000
RNA Science and Technology in Health and Disease	7/2019 – 6/2022	NIH / NIGMS	Co-PI	41,261
Fabrication of efficient reconfigurable neuromorphic systems	2/2019 – 9/2022	AFRL	PI	1,768,105
Novel imaging devices for measurement and control of tumor microenvironments	4/2017 – 3/2022	NIH/NCI	Sub-PI	587,856
Packaged Chemical and Biological Photonic Integrated Circuit ("PIC") Sensors	1/2018 – 3/2019	US Air Force Research Laboratory	Sub-PI	82,883
2019 Disposable Photonics for Biomedical Assays	1/2019 – 5/2020	US Air Force Research Laboratory	Sub-PI	68,890
Fabrication technologies for superconducting optoelectronic neuromorphic computing	2/2019 – 9/2022	AFRL	Co-PI w/ S. Papa Rao	900,000
SPX: Collaborative Research: Automated Synthesis of Extreme-Scale Computing Systems Using Non-Volatile Memory	10/2018 – 9/2022	NSF	PI	500,000

HfO2 based ferroelectric FET and tunnel junctions for non-volatile logic-in-memory and neuromorphic computing	7/2018 – 6/2019	SRC / GRC	co-PI	73,957
Nanoscale Electronics Development and Fabrication	10/1/2017 – 9/30/2020	AFRL	PI	879,980
NASA John C. Stennis Space Center – Graduate Fellowship (N. Cady – PI)	8/1/14 – 9/30/18	NASA	PI	278,820
Fabrication of a memristive dynamic adaptive neural network array (DANNA)	12/2015 – 11/2019	AFRL	PI	1,192,071
Nanoelectronics device fabrication	8/2013 – 9/2017	AFRL	PI	365,400
Non-Invasive Local Diagnosis of Surgical Infections	7/2015 – 6/2018	NIH	Co-Investigator	142,423
Phase II SBIR - Novel Hyaluronic Acid Polymer for Repair of Ocular Injuries	9/1/2015 – 3/30/2017	DoD	Sub-grantee	37,687
A Hyaluronan-based Product for Ocular Delivery of Antibiotics	7/2016 – 3/2017	National Science Foundation	Co-PI	15,830
Phase I & II SBIR - Hyaluronan-based ocular delivery of antibiotics	9/1/2014 – 3/30/2017	NSF	Investigator	40,681
XPS: EXPL: FP: Collaborative Research: Formal methods based algorithmic synthesis of more-than-Moore nano-crossbars for extreme-scale computing.	8/1/2014 – 7/30/2016	NSF	Co-PI	84,896
Bio-inspired semiconductor technology (SBIR) – Phase II	6/2013 – 7/2016	US Army	Investigator	103,716
CMOS / memristor for AES encryption	10/2010 – 9/2015	US Air Force	PI	2,184,000
An open source platform for multi-scale spatially distributed simulations of microbial ecosystems	9/2011 - 8/2014	DOE	co-PI	291,323
Extracellular scaffold elasticity and binding sites in acinar differentiation	12/2011 – 11/2014	NIH – NIDCR	co-I	30,300
Holistic Diagnosis of Host During Development of Cancer	10/2011 – 9/2014	NIH – NCI	co-I	194,950
Bio-inspired semiconductor technology (SBIR) – Phase I	6/2013 – 7/2014	US Army	Sub-contract w/ EWA Govt. Systems	15,864

Inhibition of oral bacterial biofilm formation using natural products-inspired organic compounds	4/2011 - 6/2013	NIH - NIDCR	PI	211,882
MRI: Acquisition of an Atomic Force Microscope/Confocal Imaging System for Research and Training at the CNSE	8/2009 – 7/2012	NSF MRI	co-PI	872,364
Role of Protein Kinase C in Macrophage Activation	7/2010 – 6/2013	NIH - NIGMS	Co-PI	31,586
Nanotechnology Support for Memristor Nanoelectronics	4/2009- 9/2011	US Navy Office of Naval Research	PI	195,823
Photosynthesis on a chip: microscale energy production	10/1/2010 – 12/30/2011	US Army	PI	64,807
Crossbar Nanocomputer Development	11/2009 – 10/2011	US Air Force	PI	500,000
Nanomaterials for Advanced Computing Applications	6/2009 – 9/2011	US Air Force	PI	195,000
CMOS-Memristor Hybrid Nanoelectronics	2/2010 – 10/2010	US Air Force	co-I	60,000
STTR - Novel Materials for a PicoCalorimeter Biological Application	8/2009 – 7/2010	NSF STTR	PI – Academic	50,000
STTR – Nanomaterial based coatings for wound healing applications	7/2009 – 6/2010	US Navy STTR	PI – Academic	30,000
			Total	**28,142,513**

Other Funding

These awards are from NY State or industrial sponsors, or from university-related sources that were not competitively reviewed outside of the University.

Title	**Dates**	**Agency**	**Role**	**Amount**
Rapid diagnostic test for COVID-19 infection history, vaccination status and response to variants	9/2022- 9/2025	NY State Empire State Development	PI	500,000
CATN2: Small pitch probing of VLSI	9/2021 – 12/2022	CATN2 (New York State)	PI	53,153

Processes for fabrication of atomically precise strongly correlated materials	4/2020 – 4/2022	Xallent (DARPA SBIR award)	Sub-contract PI	146,401
Resistive Random Access Memory (RRAM) for AI Applications	5/2020 – 10/2023	SUNY-IBM AI Collaborative Research Alliance	PI	300,000
Nanoscale plasmonic gratings	11/2020 - 12/2021	Ciencia, Inc.	PI	4,211
Disposable Photonics for Biomedical Assays	1/2019 – 5/2020	Ortho Clinical Diagnostics Incorporated	Sub-PI	43,000
Developing microfluidics solutions for photonic sensing	5/2018 – 3/2019	Ortho Clinical Diagnostics	PI	48,000
Fabrication and processing of polymeric substrates	5/2019 – 9/2019	Applied Materials	PI	13,083
Polymeric Processing for Nanoscale Device Applications	1/2019 – 12/2019	CATN2 (New York State)	PI	89,807
Investigation of biological nanodendrites for delivery of natural active ingredients for the treatment of cancer in Northeast India	4/2016 – 16/2019	Albany Neutraceuticals LLC	PI	177,139
4E Network: Biomimicry as a Cross-Disciplinary Research & Collaborative Platform	6/2015 – 5/2016	SUNY NoE	PI	135,000
Biomaterial based 3D Engineering of Composite Cartilage Structure	6/2015 – 5/2016	SUNY NoE	Co-PI	16,700
4E Network: Biomimicry as an Approach to Research on Energy and the Environment	5/2014-4/2015	SUNY 4E NoE	PI	3,000
Assessment of biological characterization equipment across SUNY campuses	8/2014 – 7/2015	SUNY Materials NoE	PI	24,000
Analytics in Support of the Nano Health and Safety Center	1/2013 – 12/2016	CNSE NanoHealth & Safety Center	PI	300,000
Biomass-based remediation of heavy metal contaminated wastewater	12/2011 – 12/2014	CNSE NanoHealth & Safety Center	PI	350,000
Biomimetic Approach to Improving the Energy Efficiency of HVAC Air Filtration-a Feasibility Study	11/2013 – 6/2014	NYS Energy Research and Development Authority	PI	49,889
Robust implantable sensor for musculoskeletal medicine	10/2012 – 12/2013	RPI/SUNY/Albany Med Alliance	PI	11,000
Microbial Biormediation of Copper - Phase II	1/2010 – 7/2011	Atotech GmBH	PI	86,095
Nanofiber Biosensor	10/2009 – 9/2010	CNSE Challenge Grants	co-PI	70,000

Symmetric and Asymmetric Modulation of CD34+ Hematopoietic progenitor Cells by Modification of Cell Contacts	1/2009 – 12/2009	Nanobiotechnology Center, Cornell Univ.	co-PI	60,000
Microbial Bioremediation of Copper	4/2009 – 8/2009	Atotech GmBH	PI	16,000
RNA Aptamers for Nanotechnology Applications	3/2008 – 2/2009	CNSE/CAS Collaborative Research Award	co-PI	75,000
Excelsior Scholars Summer Program	6/2008 - 8/2008	NYS Board of Education	co-I	153,000
Polymeric Electrode Arrays for Human Blood Screening	5/2007 – 1/2008	UAlbany FRAP B	co-PI	7,026
Development of Novel Microbial Fuel Cell Electrodes	5/2007 – 1/2008	UAlbany FRAP B	PI	4,000
Dynamic Measurement of Cell Adhesion	5/2007 – 1/2008	UAlbany FRAP A	PI	10,000
			Total	**2,745,504**

INVITED PRESENTATIONS

1. November 6, 2024 Nanovember Invited Presentation, Albany, NY
2. October 17, 2024 Army Research Laboratory – Tactical Edge Neuromorphic Processing Workshop
3. February 28, 2024 Rensselaer Polytechnic Institute – Albany Nanotech Seminar Series
4. September 13, 2023 Rensselaer Polytechnic Institute – Materials Science Departmental Seminar
5. August 28, 2023 IEEE National Aerospace and Electronics Conference (NAECON), Dayton, OH
6. November 21, 2022 Artificial Intelligence Workshop, UAlbany/SUNY Poly, Albany, NY
7. October 3, 2022 American Chemical Society Regional Meeting, Rochester, NY
8. February 9, 2022 Microelectronics Reliability & Qualification Workshop (virtual)
9. January 31, 2022 University at Albany Alumnae Association (virtual)
10. October 1, 2021 Eastern NY ASM Fall meeting (virtual)
11. August 11, 2021 ACS Northeast Chapter Meeting (virtual)
12. November 9, 2020 Texas A&M University (virtual)
13. November 6, 2020 American Physical Society Northeast Meeting (virtual)
14. November 2, 2020 Materials Science & Technology (MST) Conference (virtual)
15. August 12, 2020 IEEE RAPID Conference (virtual)
16. July 24, 2020 Tokyo Electron TTCA Technical Seminar, Albany, NY (virtual)
17. March 18, 2020 SRC Logic and Memory Devices Review (virtual)
18. February 2, 2020 SPIE BiOS Conference, San Francisco, CA
19. November 19, 2019 Park Systems, Albany, NY
20. October 22, 2019 American Vacuum Society Conference, Columbus, OH
21. October 3, 2019 SEMI Northeast Conference, Albany, NY
22. September 14, 2019 Spirochete Symposium, U. at Buffalo, Buffalo, NY
23. July 12, 2019 National Youth Science Camp, Bartow, WV
24. April 26, 2019 IBM TJ Watson Research Center, Yorktown Heights, NY
25. April 16, 2019 Rochester Inst. of Tech., Rochester, NY
26. April 5, 2019 SUNY Poly / UAlbany Combined Symposium
27. December 3, 2018 Wadsworth Inst., NYS Dept. of Health, Albany, NY
28. November 14, 2018 IEEE Albany Nanotech Symposium, Albany, NY
29. June 18, 2018 UT-Knoxville, Knoxville, TN
30. July 11, 2018 National Youth Science Camp, Bartow, WV
31. March 13, 2018 GOMACTECH Conference, Miami, FL
32. April 17, 2018 SPIE CBRNE Conference, Orlando, FL
33. July 14, 2017 Wadsworth Institute, NY State Dept. of Health, Albany, NY
34. June 24, 2017 National Youth Science Camp, Bartow, WV
35. April 20, 2017 Materials Research Society, Phoenix, AZ
36. March 20, 2017 GOMAC Tech Conference, Reno, NV
37. June 27, 2016 National Youth Science Camp, Bartow, WV
38. May 19, 2016 8th Annual NY State Biotechnology Symposium, Syracuse, NY
39. March 17, 2016 GOMAC Tech 2016, Orlando, FL
40. February 29, 2016 Binghamton University, Binghamton, NY
41. January 29, 2016 University of Idaho, Moscow, ID
42. October 2015 co-Session Chair – NY Manufacturing Conference, Albany, NY
43. Sept. 18, 2015 Duquesne University, Pittsburgh, PA
44. June 15, 2015 National Youth Science Camp, Bartow, WV
45. March 24, 2015 GOMAC Tech Conference, St. Louis, MO
46. May 25, 2014 SUNY Upstate Medical College, Syracuse, NY

47. June 24, 2013	GRC – ETAB – Summer Study – Research Triangle Park, NC
48. May 16, 2013	Perkin Elmer Inspiring Innovation Tour - Albany, NY
49. May 1, 2013	Advanced Energy Conference – New York, NY
50. March 27, 2013	UAlbany School of Public Health, Albany, NY
51. March 3, 2013	ABRF 2013 – Palm Springs, CA
52. Nov. 27, 2012	Innovative Molecular Analysis Technologies – Houston, TX
53. Nov. 8, 2013	Capital Region Cancer Research Group – Albany, NY
54. May 10, 2012	Boston University
55. October 21, 2011	Air Force Research Laboratory, Dayton, OH
56. October 19, 2011	Intn'l. Sematech Manufacturing Initiative (ISMI) Symposium, Austin, TX
57. October 13, 2011	Rochester Institute of Technology, Rochester, NY
58. May 23, 2011	University of Rochester, Rochester, NY
59. Nov. 15, 2010	CNSE Nanovember Community Lecture Series, Albany, NY
60. November 8, 2010	Lafayette College, Easton, PA
61. October 28, 2010	Lab on a Chip World Congress, San Diego, CA
62. September 22, 2010	Dartmouth College, Hanover, NH
63. September 15, 2010	College of St. Rose, Albany, NY
64. June 11, 2010	43rd New England Complex Fluids Workshop, RPI, Troy, NY
65. May 30, 2010	IEEE, ISCAS 2010, Paris, France
66. March 21, 2010	ABRF Meeting, Sacramento, CA
67. March 19, 2010	Nanobiology Symposium, CNSE, UAlbany, Albany, NY
68. January 20, 2010	Worchester Polytechnic University, Worchester, MA
69. December 10, 2009	Joint Workshop on Advanced Materials, CNSE, UAlbany, Albany, NY
70. December 1, 2009	Boston University, Boston, MA
71. November 11, 2009	NERLSCD Conference, Cornell Univ., Ithaca, NY
72. June 9, 2009	UVM – Microarray Core Facility
73. April 20, 2009	Upstate New York LRIG, INC
74. April 23, 2009	Bethlehem High School Press Club Event
75. April 4, 2009	CSTEP Conference - Sagamore Hotel, Bolton Landing, NY
76. March 31, 2009	2009 Upstate New York Junior Science and Humanities Symposium

PROFESSIONAL SERVICE

Editorial board member:

The Journal of Nano Education	2010 – 2018
Experimental Biology and Medicine (Assoc. Editor – Bionanoscience)	2019 - 2023

Guest editor:

Sensors – Spec. iss. "Sensors and Analytics for Cell Bio & Tiss. Eng."	2013-2014
The International Journal of Biomedical Nanoscience and Nanotech	2009 - 2011

Grant proposal reviewer for:

Hong Kong Innovation and Technology Fund	2014 - Present
U.S. Dept. of Energy Early Career Research Program	2011 – 2023
American Association for the Advancement of Science	2011 - Present
NSF SBIR, STTR and "Nano" programs	2009 - Present
Singapore National Medical Research Council	2010 - 2023

NSF "Environmental Impacts of Nanotechnolgy" program	2010, 2012, 2013
New Zealand Ministry of Business, Innovation and Employment	2012
State of Louisiana Board of Regents Grants Program	2010 - 2011
Canadian (CBRNE) Research and Tech. Initiative (CRTI)	2010 - 2011
NIEHS (NIH) UO1 and SBIR programs	2009, 2010

Scientific reviewer for peer-reviewed, high impact scientific journals including but not limited to:

- *ACS Nano*
- *Analytical Chemistry*
- *Analytica Chimica Acta*
- *Antimicrobial Agents & Chemotherapeutics*
- *Applied and Environmental Microbiology*
- *Applied Physics Letters*
- *Biomedical Microdevices*
- *Biomicrofluidics*
- *Biosensors and Bioelectronics*
- *Electroanalysis*
- *Lab on a Chip*
- *Sensors and Actuators (A & B)*
- *Analyst*
- *RSC Advances*
- *IEEE Nano*
- *Applied Physics Letters*
- *Transactions on Nanotechnology*
- *Nanoscale*

External Advisory Committees

Ed. Programs Committee, Board of Trustees, Coll. of St. Rose	2014 - 2015
Albany High School Academy of Engineering Advisory Board	2009 - 2013
NYSERDA Biomimicry Focus Area	2009 - 2010
NY City Mayor's Office Criminal Justice Coordinator	2009 – 2010

SERVICE ACTIVITIES

University and SUNY-wide Service

SUNY Poly / UAlbany Merger Working Groups – Research, Finance/Admin	2022 – 2023
SUNY-wide Microelectronics Commons / CHIPS Act Initiative	2021 – 2024
• Member of American Semiconductor Innovation Coalition (ASIC)	
○ Memory Coalition of Excellence	
○ BioMed Tech / Analog Mixed Signal Coalition of Excellence	
Executive Director of the SUNY Applied Materials Research Institute	2019 – 2024
SUNY Polytechnic Institute Institutional Biosafety Committee (IBC)	2018 – 2023
SUNY Polytechnic Institute Council on Student Affairs	2015 – 2019
SUNY Polytechnic Institute Council on Environmental Health & Safety	2015 - 2023
SUNY Polytechnic Institute Graduate Academic Council	2014 – Fall 2018
SUNY Polytechnic Institute Biosafety Committee	2014 - 2018
UAlbany Institutional Biosafety Committee (IBC)	2011 - 2023
SUNY Polytechnic Institute Faculty Assembly (**past year Chair service**)	2016 – 2017
SUNY Polytechnic Institute Faculty Assembly (**Chairperson)**[*]	2015 – 2016
SUNY Global Health Institute Steering Committee	2015 – 2016
SUNY Materials Network of Excellence Steering Committee	2013 – 2016
SUNY BRAIN Network of Excellence Steering Committee	2013
UAlbany General Education Advisory Board	2013 – 2013
UAlbany Faculty Senate – Undergraduate Academic Committee (UAC)	2010 – 2013
UAlbany Faculty Senate – Interdisciplinary Studies sub-committee (Chair)	2010 – 2013

University at Albany Business Council Roundtable on Innovation	2009 – 2011
SUNY State Legislative Poster Session "Research that Matters" Participant	2010 - 2011
10th Annual University at Albany Division for Research Panelist	2010
University at Albany Faculty Research Award Program (FRAP) Reviewer	2010 - 2011
University at Albany Community Day Speaker / Volunteer	2009
University at Albany Going Forward Plan Participant	2008
University at Albany Day Representative	2008
Organized the first Nano/Bio Research Forum for CAS & CNSE (UAlbany)	2008
Senior RNA Faculty Search Committee, CAS (UAlbany)	2007 – 2008
UAlbany New Faculty Research Panelist	2007

College and Department Service

NSE Nanobioscience Qualifying Exam Committee Member	2007 – Present
Representative and voting member of CNSE Faculty Council	2006 – 2022
CNSE Patent & Intellectual Property Review Committee	2015 - 2016
CNSE Senate Research Council	2014 - 2016
CNSE Senate Env. Health & Safety Council	2014 - 2016
CNSE Senate Graduate Curriculum Council	2014 - 2016
CNSE Biosafety Committee	2013 – 2016
CNSE Site Safety Committee	2011 – 2016
CNSE SEMATECH Program Advisory Group (PAG) Representative	2011 – 2015
CNSE/SUNY Downstate MD/PhD Program Executive Committee	2011 – 2017
CNSE Nanobioscience Faculty Search Committee	2008 – 2015
CNSE Faculty Council Summer Internship Review Committee / co-Chair	2007 – 2015
CNSE Matthew Tomlin Scholarship Committee	2010
CNSE Student Services Position Search Committee	2006 – 2009
CNSE 200mm Facility Support Technician Search Committee	2008
Nano Grad Student Organization PRECURSOR Competition Mentor / Judge	2008

Outreach

National Youth Science Camp (Bartow, WV)	2014 - Present
FIRST Lego League competition volunteer	January 2019
Voorheesville Middle School	2012 - 2022
Girls Inc. "Eureka" Project Leader	2012 - 2017
Tech Valley High School Mentor / Project Leader	2011 - 2019
Albany High School Engineering Explorations advisor / mentor	2006 - 2014
Albany High School Nano High Program advisor / mentor	2006 - 2014
CNSE Nano Career Day	2006 – 2014
CNSE Nano Community Day	2008 – 2013
Institute for Nanoscale Technology & Youth (INTY) Workshop Coordinator	2009 - 2012
CMOST Summer Camp Activity Organizer	2009, 2010
Schenectady School District After School Programs Tour and Lab Workshop	April 2009
Delaware Community School Tour and Presentation	March 2009
College for Every Student (CFES) Program	Fall 2008
Future City Writing Competition	Spring 2007
Bethlehem First Lego Team mentor and advisor	Spring 2007
NY State First Lego League team mentor and advisor	Fall 2006

TEACHING

Current Academic Offerings at SUNY Polytechnic Institute

NNSE 509 Polymeric and Amorphous Materials (grad) - SPRING

Past Academic Offerings at SUNY Polytechnic Institute

NSCI 300 Integrated NanoLaboratory I (undergrad) – FALL

NNSE 506 Principles of Nanobiology (grad)

NENG 424 Nanoscale Chemical and Biological Sensors (undergrad)

NENG 434 BioMEMS and BioNEMS (undergrad)

NNSE 508 Interfacial Properties of Nanobiological Materials

NNSE 641 Principles of Chemical and Biological Sensors (grad) – FALL, ALTERNATING YEARS

STUDENT AND POST DOC ADVISEMENT / TRAINING

Post Doctoral Training

1. Karsten Beckmann, PhD – Currently working at SUNY Poly as an integration engineer
2. Aaron Mosier, PhD – Followed post doc appointment as research scientist at SUNY-PI
3. Seann Bishop, PhD – Currently works at General Electric (Schenectady, NY)
4. Robert Balsano, PhD – Currently works for Inficon (Syracuse, NY)
5. Harika Manem, PhD – Currently teaching faculty at Oregon Technical College, OR
6. Nima Nikvand, PhD
7. Pramod Ravindra, PhD – Currently works for Applied Materials in Boston, MA
8. Maximilian Liehr, PhD – Currently works for NY CREATES

PhD Dissertation Advisement

Note: *(*) = graduated*

1. *Aaron Mosier, PhD, May 2013, “Nanomechanical properties of bacterial biofilms” (Primary Advisor)
2. *Nicholas Fahrenkopf, PhD, January 2013, “High sensitivity detection of DNA using field effect transistors” (Primary Advisor)
3. *Zachary Rice, PhD, May 2013, “Nanomaterials for memristive electronics” (Primary Advisor)
4. *Mary Graham, PhD, May 2014, “Topographical surface patterning for antifouling surfaces” (Primary Advisor)
5. *Benjamin Briggs, PhD, May 2014, “Nanoscale hafnium oxide based resistive switching devices” (Primary Advisor)
6. *Jihan Capulong, PhD, May 2015, “Resistive memory architectures for advanced encryption and neuromorphic applications” (Primary advisor)
7. *William Hynes, PhD, May 2016, “Nanofabrication strategies for cellular and biomolecular patterning” (Primary Advisor)
8. *Steven Kasper, November 2016, “Novel approaches to mitigating bacterial biofilm formation and intercellular communication” (Primary advisor)
9. *Karsten Beckmann, May 2017, “ReRAM for advanced encryption and neuromorphic applications” (Primary advisor)

10. *Vishal Desai, May 2017, "Novel uses of directly patternable silicon oxide based resist for advanced patterning applications" (Primary advisor)
11. *Zahiruddin Alamgir, May 2018, (Primary advisor)
12. *Stephanie Curley, May 2018, "Investigation of the MS2 Bacteriophage Capsid as an MRI-Capable, Brain-Targeted Nanoparticle Platform"
13. *Joshua Holt, anticipated graduation, November 2018, "Radiation resistance of resistive memory devices" (Primary advisor)
14. *Logan Butt, November 2018, "The Microfluidic Intravital Window: A Tool for Manipulation and Imaging of the Tumor Microenvironment" (Secondary advisor)
15. *Wilkie Olin-Ammentorp, May 2019 (Primary advisor)
16. *Eunice Chou, May 2019, "Development of a grating-coupled fluorescent plasmonics (GC-FP) biosensing platform for quantitative multiplexed serodiagnosis of human Lyme disease" (Primary advisor)
17. *Jubin Hazra, August 2021, "Development of High-Performance Hafnium Oxide based Non Volatile Memory Devices on 300mm Wafer Platform for Data Storage and Neuromorphic Applications" (Primary advisor)
18. *Erica Graham, April 2021, "Mechanical Analysis of a Heterogeneously Integrated Silicon Photonic Interposer" (Primary advisor)
19. *Sarah Rafiq, May 2022 "Application of Resistive Random Access Memory (ReRAM) for Non-von Neumann Computing" (Primary advisor)
20. *Tristen Head, October 2022, "Microfluidic Imaging Windows for Study of the Tumor Microenvironment" (Primary advisor)
21. *Maximillian Liehr, December 2022, "Reliability and Performance Optimization of Resistive Random-Access Memory Devices for Advanced Computing and Memory Applications" (Primary advisor)
22. *Minhaz Abedin, May 2023, "RRAM Device Optimization and Circuit Design for Low Power Low Latency Domain Specific Edge Applications" (Primary advisor)
23. Jeelka Solanki, (Primary advisor) anticipated graduation May 2024
24. Rajas Mathkari, (Primary advisor) anticipated graduation May 2025
25. Dwiti Krishna Das, (Primary advisor) anticipated graduation May 2026
26. Jinam Modasiya, (Primary advisor) anticipated graduation May 2028

Masters Thesis Advisement

27. *Ted van Hoof, Spring 2008 – May 2010, "Nanoporous Titania as a Scaffold for Enzyme Immobilization and Stabilization" (Co-advised with Prof. Alain Kaloyeros)
28. *Blaze Messer, Fall 2009 – May 2010, "Micro-scale Calorimeters for Biological Applications" (Primary Advisor)
29. *Zachary Rice, Summer 2009, "Development of a Relative Humidity Sensor for PEM-Based, Fuel Cell Systems" (Co-advisement with Prof. Bai Xu)
30. *Jason Behnke, Fall 2010 – August 2011, "Natural products inspired inhibitors of bacterial biofilm formation" (Primary Advisor)
31. *Nathan McDonald, August 2011 – December 2012, "Copper oxide based resistive switching devices" (Primary Advisor)
32. *Aleksandra Gunko, May 2014, "Copper coil RF antennae for biomedical sensing applications" (Primary advisor)
33. *Lukas Tierney, August 2016 – August 2019, Single Particle ICP-MS for Biological Studies

34. *Minhaz Abedin, May 2020 – Integrated Cyclic Olefin Copolymer Microfluidics and Silicon-Based Sensors for Lab-On-A-Chip Applications
35. *Zachery Woods, May 2023 - Logical Computation Applications integrated in ReRAM Architecture
36. Theodore Wallach, Anticipated graduation May 2025

Graduate Student Committees – <u>Committee Member</u>

1. Alison Gracias. Masters defense, 2008
2. Mayrita Arrandale, Masters defense, August 2008
3. Da Song, PhD defense, November 2008
4. Bruce Altemus, PhD defense and oral examination, 2009
5. Daniel Pesantez, PhD defense and oral examination, 2009
6. Waseem Raja, PhD defense and oral examination, November 2010
7. Xiaoli He, PhD oral examination, March 2011
8. Mark Knight, PhD oral examination, May 2011
9. Stacey Helming, PhD preliminary examination, July 2011, School of Public Health, UAlbany.
10. David Soscia, PhD defense and oral exam, July 2012
11. Nurazhani Abdul Raof. PhD defense, May 2013
12. Michael Zonca. PhD defense, November 2013
13. Nicholas Joy. PhD defense, May 2013
14. Xiaoli He. PhD defense, May 2013
15. Brian Butcher. PhD defense, July 2013
16. Tamir Danon – Master's thesis committee 2013/4
17. Paul Kutscha – oral exam, Sept. 2014
18. Scotty McAdoo – Master's thesis, May 2015
19. Robin Jacobs-Gedrim – PhD defense, May 2015
20. Nicole Flaherty – PhD defense, April 2015
21. Bridget Mooney – PhD defense, June 1, 2016
22. Robert Schramm – PhD oral exam, June 2016
23. Caroline Horizny – PhD oral exam, August 2016
24. Nicholas Karker – PhD oral exam, November 2016
25. Vitor Vulcano Rossi – PhD oral exam, November 2016
26. "Isabel" Yangzi Tian – PhD oral exam, December 2016
27. Maseeh Mukhtar – PhD oral exam, April 2017
28. Caitlin Philippi – PhD oral exam, July 2017
29. Steven Grzeskowiak – PhD oral exam, July 2017
30. Nicholas Padula – Master's thesis defense, September 2017
31. Nicholas Karker – PhD defense, March 2018
32. Kevin Musick – PhD oral exam, March 2018
33. Caitlin Philippi – PhD defense, April 2018
34. Maseeh Mukhtar – PhD defense, April 2018
35. Graham Potter – PhD defense, May 2018
36. Jennifer Passage – PhD oral exam, June 2018
37. James Dillon – PhD oral exam, July 2018
38. Erica Graham – PhD oral exam, August 2018
39. Sudheer Sagabala – PhD oral exam, August 2018
40. Jodi Hotalen – PhD oral exam, August 2018

41. Robert Carroll – PhD defense, August 2018
42. Matthew Strohmeyer – PhD oral exam, August 2018
43. "Isabel" Yangzi Tian – PhD defense, October 2018
44. Sara Evke – PhD preliminary exam, January 2019
45. Nora Houlihan – PhD preliminary exam, January 2019, PhD defense August 2020.
46. Laila Banu – PhD defense, July 2019
47. Steven Grzeskowiak – PhD defense, August 2019
48. Jennifer Passage – PhD defense, August 2019
49. Pujhitha Ramesh – PhD oral exam, August 2019, PhD defense May 2022
50. Jodi Grzeskowiak – PhD defense, August 2019
51. Sara Evke – PhD defense, July 2021
52. Matthew Jorgensen, May 2021
53. Norbert Agbodo, May 2021
54. Rubab Ume – PhD oral exam, February 2022
55. Matthew Strohmayer – January 2022
56. Mohd Mueen – PhD oral exam, December 2022
57. Yamini Kumaran – PhD oral exam, January 2023
58. Bhavani Sasank Nagothi – PhD oral exam, December 2023
59. Ivo Otto – PhD oral exam, December 2023
60. Michael Dolan – PhD defense, November 2023
61. Stephen Christopher Rose – PhD defense, May 2024

Student Interns and Independent Study Mentees

1. Nicholas Fahrenkopf	Spring 2007 – Spring 2008
2. William (Rick) Hynes	Fall 2007 – Spring 2009
3. Jason Behnke	Spring 2008 – Spring 2010
4. Brian Clow	Spring 2009 - Fall 2009
5. Joshua Kessler	Spring 2009 – Spring 2010
6. Gabriel Kousourou	Fall 2009 – Spring 2010
7. Steven Kasper	Spring 2010 – Spring 2011
8. Lyndsay Toth	Spring 2010 – Spring 2011
9. Alicia McCarthy	Summer 2010 – Fall 2010
10. Daniel Sellers	Fall 2010 – Fall 2012
11. Michael Hovish	Summer 2011 – Spring 2013
12. Samantha Testa	Fall 2011 – Spring 2013
13. Victoria Crockett	Spring 2013 – Spring 2014
14. Rachel Bourgignon	Fall 2012 – Spring 2013
15. James Sidoli	Spring 2013
16. Xinru Wang	Summer 2013 – Spring 2014
17. Tad Reese	Summer 2014 – Spring 2015
18. Dominic Picciocca	Fall 2014 – Spring 2015
19. Sarah Lombardo	Summer 2014 – Spring 2016
20. William Gasperi	Summer 2015 – Spring 2018
21. Zachary Schaffer	Fall 2015 – Spring 2017
22. Liam Wisehart	Summer 2016
23. Elena Musteata	Spring 2015 – Present
24. Ryan Hart	Spring 2015 – Present
25. Duncan McCloskey	Fall 2016 – Spring 2017

26. Nadia Suguitan	Fall 2016 – Present
27. Samuel Marthage	Fall 2016 – Spring 2017
28. Sierra Russell	Spring 2017 - Present
29. Aleksandr Filippov	Spring 2017
30. Katherine Niles	Summer 2017
31. David Lonstein	Fall 2017 – Spring 2018
32. Alex Hartwell	Fall 2017 – Spring 2018
33. Austin Clark	Fall 2017 – Spring 2018
34. Emma Richardson	Fall 2017 – Spring 2019
35. Ezra Romero	Summer 2018 – Spring 2019
36. Elizabeth Blackert	Fall 2018 – Spring 2019
37. Juliana Bourgeois	Fall 2018 – Spring 2019
38. Evan Iler	Summer 2018 – Spring 2019
39. Mehek Ahmed	Spring 2019 – Spring 2020
40. Colton Almarino	Fall 2019 – Spring 2020
41. Brian Lanchester	Fall 2019 – Spring 2020
42. Michael Johnson	Fall 2019 – Spring 2020
43. Mubtasim Akhyar	Fall 2020 – Spring 2021
44. Ashley Gibbons	Spring 2021 – Spring 2022
45. Daniel Titcombe	Spring 2022 – Present
46. William Grice	Spring 2022 – Fall 2022
47. James Plummer	Summer 2023
48. Salwah Riaz	Summer 2023
49. Gabriella Fontana	Fall 2023 – Spring 2024
50. Xiuxin Wu	Summer 2024
51. Quotayba Yusif	Summer 2024
52. Hasan Merzai	Summer 2024

Non – UAlbany Students

53. Kai Dallas (Cornell University)	Summer 2007
54. Natalie McClain (Cornell University)	Summer 2008
55. Katherine Lee (Binghamton University)	Summer 2009 – Summer 2010
56. Sree Addepalli (University of Michigan)	Summer 2010
57. Amanda Stewart (Stony Brook University)	Summer 2010
58. Jennifer Baxter (Hamilton College)	Summer 2011, 2012
59. Rhoda Asimeng (Siena College)	Summer 2011 (UASRP)
60. Chantel Grubbs (Florida A&M)	Summer 2012 (UASRP)
61. Sean McGinn (Binghamton University)	Summer 2012
62. Eileen Jin (Dartmouth College)	Summer 2012
63. Jared Mondschein (Union College)	Summer 2013
64. Oludayisi Otulaja (Stony Brook University)	Summer 2014 (UASRP)
65. Gavin Clark-Gartner (Cornell University)	Summer 2014
66. Julian Duff (Stony Brook University)	Summer 2015
67. Olivia Ahner (Northeastern University)	Summer 2016
68. Gabriel Zenteno (UAlbany)	Summer 2017
69. Tyler Jetjomlong (UAlbany)	Summer 2018, Spring 2019
70. Sureel Shah (UBuffalo)	Summer 2019
71. Prithwish Dan (Cornell)	Summer 2021

72. Piyush Bhatia (India)	Winter 2025

Medical Students

73. Luke Beardslee (Albany Medical College)	2013 – 2015
74. John Ling (Indiana Univ. Medical College)	Summer 2012