

Tse Nga Tina Ng

Associate Professor, Department of Electrical and Computer Engineering
University of California San Diego, 9500 Gilman Dr., La Jolla, CA 92093
Website: <http://flexible-electronics.ucsd.edu/> Email: tnn046@ucsd.edu

Professional Preparation

Knox College, Galesburg, IL	Chemistry	B.A.	2000
Cornell University, Ithaca, NY	Physical Chemistry	Ph.D.	2006
Palo Alto Research Center, Palo Alto, CA	Electronic Devices Lab	postdoc	2006-2008

Appointments

2016–Current	Associate Professor, University of California San Diego
2011–2015	Senior Member of Research Staff, Palo Alto Research Center, CA
2008–2011	Member of Research Staff, Palo Alto Research Center, CA

Honors

2012	Flextech Innovation Award, where Flextech is an industrial consortium
2012	Wall Street Journal Technology Innovation Award, Runner-up
2012	PARC Golden Acorn Award, which recognized the inventor of a patent that adds significant value to the PARC IP assets
2014	Grainger Foundation Grant for Interdisciplinary Research awarded by NAE
2017	Hartwell Foundation Investigator
2017	Bell Lab Prize for a game-changing global technology, Second Place

Community Service

2012-2018	Board Member, External Advisory Committee of NSF Partnership for Research and Education in Materials Center at UC Santa Barbara and UT El Paso
2015-present	Associate Editor, Institute of Physics Journal <i>Printed Flexible Electronics</i>
2019-present	Advisory Board, American Chemical Society Journal <i>ACS Applied Electronic Materials</i>

Publications

1. N. Li, N. Eedugurala, D.-S. Leem, J. D. Azoulay, T. N. Ng, Organic Upconversion Imager with Dual Electronic and Optical Readouts for Shortwave Infrared Light Detection, *Advanced Functional Materials*, 31, (2021), 2100565.
2. J. H. Vella, L. Huang, N. Eedugurala, K. S. Mayer, T. N. Ng, J. D. Azoulay, Broadband Infrared Photodetection Using a Narrow Bandgap Conjugated Polymer, *Science Advances*, 7, (2021), eabg2418.
3. S.-E. Wu, L. Yao, A. Shiller, A. H. Barnard, J. D. Azoulay, T. N. Ng, Dual-Gate Organic Electrochemical Transistors for Marine Sensing, *Advanced Electronic Materials*, (2021), 2100223.
4. D.-S. Leem, K.-H. Lee, N. Li, B. W. Park, T. Choi, T. Ro, O. K. Kwon, Y.-N. Kwon, T. N. Ng, S. Kim, Highly Responsive and Thermally Reliable Near-Infrared Photodiodes Utilizing Naphthalocyanine Molecules Tuned with Axial Ligands, *Advanced Optical Materials*, 9, (2021), 2001682.

5. M. K. Rahman, T. H. Phung, S. Oh, S. H. Kim, T. N. Ng, K.-S. Kwon, High-Efficiency Electro Spray Deposition Method for Nonconductive Substrates: Applications of Superhydrophobic Coatings, *ACS Applied Materials & Interfaces*, 13, (2021), 18227.
6. Y. Bonnassieu, et al., The 2021 Flexible and Printed Electronics Roadmap, *Flexible and Printed Electronics*, 6, (2021), 023001.
7. Y. Cagri, M. Sam, B. Yifeng, M. Amit, A. J. Skalsky, M. Yip, T. N. Ng, H. Garudadri. Artifacts Mitigation in Sensors for Spasticity Assessment, *Advanced Intelligent Systems*, 3, (2021), 2000106.
8. Z. Wu, N. Li, N. Eedugurala, J. D. Azoulay, D. S. Leem, T. N. Ng. Noise and Detectivity Limits in Organic Shortwave Infrared Photodiodes with Low Disorder, *NPJ Flexible Electronics*, 4, (2020) 6.
9. Y. Zhai, Z. Wang, K. S. Kwon, S. Cai, D. J. Lipomi, T. N. Ng. Printing Multi-Material Organic Haptic Actuators, *Advanced Materials* (2020), 2002541.
10. K. Wang, L Yao, M. Jahon, J. Liu, M. Gonzalez, P. Liu, V. Leung, X. Zhang, T. N. Ng. Ion-Exchange Separators Suppressing Self-Discharge in Polymeric Supercapacitors, *ACS Energy Letters*, 5, (2020), 3276.
11. K. N. Al-Milaji, H. Qijin, Z. Li, T. N. Ng, H. Zhao. Direct Embedment and Alignment of Silver Nanowires by Inkjet Printing for Stretchable Conductors, *ACS Applied Electronic Materials*, 2, (2020), 3289.
12. N. Li, J. Lim, J. D. Azoulay, T. N. Ng. Tuning the Charge Blocking Layer to Enhance Photomultiplication in Organic Shortwave Infrared Photodetectors, *Journal of Materials Chemistry C*, 8, (2020), 15142.
13. K. Wang, L. Huang, N. Eedugurala, S. Zhang, M. A. Sabuj, N. Rai, X. Gu, J. D. Azoulay, T. N. Ng. Wide Potential Window Supercapacitors Using Open-Shell Donor-Acceptor Conjugated Polymers with Stable N-Doped States, *Advanced Energy Materials*, 9, (2019), 1902806.
14. M. Amit, L. Chukoskie, A. Skalsky, H. Garudadri, T. N. Ng. Flexible Pressure Sensors for Objective Assessment of Motor Disorders, *Advanced Functional Materials*, 30, (2019) 1905241.
15. K. Wang, U. Parekh, J. K. Ting, N. A. D. Yamamoto, J. Zhu, T. Constantini, A. C. Arias, B. P. Eliceiri, T. N. Ng. A Platform to Study the Effects of Electrical Stimulation on Immune Cell Activation During Wound Healing. *Advanced Biosystems*, 3, (2019), 1900106.
16. H. Kim, Z. Wu, N. Eedugurala, J. D. Azoulay, T. N. Ng. Solution-Processed Phototransistors Combining Organic Absorber and Charge Transporting Oxide for Visible to Infrared Light Detection, *ACS Applied Materials & Interfaces*, 11, (2019), 36880.
17. W. Yao, Z. Wu, E. Huang, A. E. London, Z. Liu, J. D. Azoulay, T. N. Ng. Organic Bulk Heterojunction Infrared Photodiodes for Imaging out to 1300 nm, *ACS Applied Electronic Materials*, 1, (2019), 660.
18. M. Amit, R. K. Mishra, Q. Hoang, A. M. Galan, J. Wang, T. N. Ng. Point-of-Use Robotic Sensors for Simultaneous Pressure Detection and Chemical Analysis, *Materials Horizon*, 6, (2019), 604.
19. Z. Wu, Y. Zhai, H. Kim, J. D. Azoulay, T. N. Ng. Emerging Design and Characterization Guidelines for Polymer-Based Infrared Photodetectors, *Accounts of Chemical Research*, 51, (2018), 3144.

20. Z. Wu, Y. Zhai, W. Yao, N. Eedugurala, S. Zhang, L. Huang, X. Gu, J. D. Azoulay, T. N. Ng. The Role of Dielectric Screening in Organic Shortwave Infrared Photodiodes for Spectroscopic Image Sensing, *Advanced Functional Materials*, 28, (2018), 1805738.
21. K. N. A.-Milaji, R. R. Secondo, T. N. Ng, N. Kinsey, H. Zhao. Interfacial Self-Assembly of Colloidal Nanoparticles in Dual-Droplet Inkjet Printing, *Advanced Materials Interfaces*, 5, (2018), 1701561.
22. H. Kim, T. N. Ng. Reducing Trap States in Printed Indium Zinc Oxide Transistors by Doping with Benzyl Viologen, *Advanced Electronic Materials*, 4, (2018), 1700631.
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24. Z. Wu, W. Yao, A. E. London, J. D. Azoulay, T. N. Ng. Elucidating the Detectivity Limits in Shortwave Infrared Organic Photodiodes. *Advanced Functional Materials*, 28 (2018) 1800391.
25. K. Wang, U. Parekh, T. Pailla, H. Garudadri, V. Gilja, T. N. Ng, "Stretchable Dry Electrodes with Concentric Ring Geometry for Enhancing Spatial Resolution in Electrophysiology," *Advanced Healthcare Materials*, 6 (2017) 1700552.
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27. Z. Wu, W. Yao, A. E. London, J. D. Azoulay, T. N. Ng "Temperature-dependent Detectivity of Near-infrared Organic Bulk Heterojunction Photodiodes," *ACS Applied Materials & Interfaces*, 9 (2017) 1654.
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29. T. N. Ng, D. E. Schwartz, P. Mei, S. Kor, J. Veres, P. Broms, C. Karlsson, "Pulse Voltage Multiplier Based on Printed Organic Devices," *Flexible Printed Electronics*, 1 (2016) 015002.
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43. T. N. Ng, S. Sambandan, J. H. Daniel, A. C. Arias, "Inkjet-patterned, Organic Complementary Circuits and Non-volatile Memory Arrays Based on Ferroelectric Field-effect Transistors," *Proceedings of Electrochemical Society Meeting: Symposium on Thin Film Transistors*, Las Vegas, Nevada (2010).
44. J. H. Daniel, T. N. Ng, A. C. Arias, S. R. Garner, "Pressure Sensors for Printed Blast Dosimeters," *Proceedings of IEEE Sensors Conference*, Waikoloa, Hawaii (2010).
45. T. N. Ng, W. S. Wong, R. A. Lujan, R. A. Street, "Characterization of Charge Collection in Photodiodes under Mechanical Strain: Comparison between Organic Bulk Heterojunction and Amorphous Silicon," *Advanced Materials*, 21 (2009) 1855.
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50. T. N. Ng, J. H. Daniel, S. Sambandan, A. C. Arias, M. L. Chabinye, R. A. Street, "Gate Bias Stress Effects due to Polymer Gate Dielectrics in Organic Thin-film Transistors," *Journal of Applied Physics*, 103 (2008) 044506.
51. T. N. Ng, R. A. Lujan, S. Sambandan, R. A. Street, S. Limb, W. S. Wong, "Low Temperature a-Si:H Photodiodes and Flexible Image Sensor Arrays Patterned by Digital Lithography," *Applied Physics Letters*, 91 (2007) 063505.

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Patents (citation counts are from Google Patent database in Jun 2021)

1. Producing layered structures with layers that transport charge carriers in which each of a set of channel regions or portions operates as an acceptable switch. USPTO Patent No. 7586080 B2, Michael L. Chabinyk, Tse Nga Ng, September 8, 2009, cited 32x
2. Producing layered structures with semiconductive regions or subregions that transport charge carriers, USPTO Patent No. 7786430, Michael L. Chabinyk, Tse Nga Ng, August 31, 2010, cited 32x
3. Producing layered structures with lamination. USPTO Patent No. 7755156 B2, Michael L. Chabinyk, Tse Nga Ng, July 12, 2010, cited 3x.
4. Charge mapping memory array formed of materials with mutable electrical characteristics. USPTO Patent No. 7679951 B2, William S. Wong, Sanjiv Sambandan, Tse Nga Ng, Robert A. Street, October 18, 2011, cited 33x
5. Flexible diagnostic sensor sheet. USPTO Patent No. 8059975 B2, Michael L. Chabinyk, Tse Nga Ng, William S. Wong, Ashish Pattekar, John E. Northrup, Pengfei Qi, November 15, 2011, cited 2x.
6. Organic memory array with ferroelectric field-effect transistor pixels. USPTO Patent No. 8158973 B2, Tse Nga Ng, Ana C. Arias, Sanjiv Sambandan, Jurgen H. Daniel, April 17, 2012, cited 6x
7. Printing shielded connections and circuits. USPTO Patent No. 8247883 B2, Jurgen H. Daniel, Tse Nga Ng, August 21, 2012, cited 8x
8. Producing layered structures with semiconductive regions or subregions. USPTO Patent No. 8283655 B2, Michael L. Chabinyk, Tse Nga Ng, October 9, 2012, cited 28x
9. Method and apparatus for using thin-film transistors and MIS capacitors as light-sensing elements in charge mapping arrays. USPTO Patent No. 8300125 B2, Tse Nga Ng, Sanjiv Sambandan, William S. Wong, October 30, 2012, cited 4x.
10. Protecting semiconducting oxides. USPTO Patent No. 8258021 B2, Tse Nga Ng, Michael L. Chabinyk, July 30, 2013, cited 27x.
11. Event sensor including printed electronic circuit. USPTO Patent No. 8624753 B2, Jurgen H. Daniel, Tse Nga Ng, January 7, 2014, cited 5x.

12. Reconfigurable printed circuit sensor systems. USPTO Patent No. 8680401 B2, Tse Nga Ng, Jurgen H. Daniel, Ana C. Arias, Brent Krusor, March 25, 2014, cited 7x.
13. Solution processed neutron detector. USPTO Patent No. 8872224B2, Gregory L. Whiting, Tse Nga Ng, Janos Veres, Robert A. Street, October 28, 2014, cited 7x
14. Self-powered manual toothbrush with sensors, Japan Patent No. 2014138852A, John Knights, Tse Nga Ng, July 31, 2014, cited 1x
15. Method for event sensing employing a printed event sensor, USPTO Patent No. 8698645 B2, J. H. Daniel, Tse Nga Ng, April 15, 2014, cited 7x
16. Printed interactive card with piezo-powered indicator. USPTO Patent No. 8976093 B2, Jurgen H. Daniel, Tse Nga Ng, March 10, 2015, cited 11x.
17. Method of fabricating a card with piezo-powered indicator by printed electronics processes, USPTO Patent No. 8959734, J. H. Daniel, Tse Nga Ng, February, 24, 2015, cited 16x
18. Digital 3D fabrication using multi-layered mold. USPTO Patent No. 9156194 B2, Tse Nga Ng, JengPing Lu, Eugene M. Chow, Timothy David Stowe, Janos Veres, Philipp H. Schmaelzle, October 13, 2015, cited 8x
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21. Reconfigurable stretchable connector substrate. USPTO Patent No. 9288898 B2, Leah Lavery, Tse Nga Ng, March 15, 2016, cited 7x
22. Organic thin-film transistor. USPTO Patent No. 9356248 B2, Tse Nga Ng, Gregory L. Whiting, Ichiro Fujieda, Bing R. Hsieh, May 31, 2016, cited 6x
23. Gravure printing process using silver nanoparticle inks for high quality conductive features, USPTO Patent No. 9486996, Tse Nga Ng, Brent S. Krusor, A. Goredema, Y. Wu, November 8, 2016, cited 9x
24. Pre-fabricated substrate for printed electronic devices. USPTO Patent No. 406896 B2, Ping Mei, Janos Veres, Tse Nga Ng, Aug 2, 2016, cited 9x
25. Protocol for assigning features and tuning resolution in digital lithography. USPTO Patent No. 9451706 B1, Tse Nga Ng, Ping Mei, Steven E Ready, Sep 20, 2016, cited 4x
26. Electroactive polymer structures printed with varying compositions of ions. USPTO Patent No. 9437804 B2, Tse Nga Ng, Kye-Si Kwon, Sep 6, 2016, cited 3x
27. Method for roll-to-roll production of flexible, stretchy objects with integrated thermoelectric modules, electronics and heat dissipation. USPTO Patent No. 9543495 B2, John Steven Paschkewitz, Corie Lynn Cobb, David Mathew Johnson, Gabriel Iftime, Victor Alfred Beck, Tse Nga Ng, Ranjeet Rao, Jan 10, 2017, cited 24x
28. Printable pulsed voltage multiplier with adjustable pulse width and amplitude. USPTO Patent No. 9729047 B2, David Eric Schwartz, Tse Nga Ng, Aug 8, 2017, cited 5x
29. Circuit layout for thin film transistors in series or parallel. USPTO Patent No. 9735382 B2, Tse Nga Ng, David Eric Schwartz, Janos Veres, Aug 15, 2017, cited 19x

30. Printed electronic components on universally patterned substrate for integrated printed electronics, USPTO Patent No. 9629252 B2, Ping Mei, Tse Nga Ng, Gregory Whiting, April 18, 2017, cited 2x
31. Printable nanoparticle conductor ink with improved charge injection, USPTO Patent No. 9853230, Tse Nga Ng, P. Mei, Y. Wu, B. E. Abraham, December 26, 2017, cited 14x
32. Printed level sensor, USPTO Patent No. 9952082 B2, D. E. Schwartz, Y. Wang, R. A. Street, P Mei, J. Veres, G. L. Whiting, S. E. Ready, T. N. Ng, April 24, 2018, cited 12x
33. Sensors comprising palladium complex ink, USPTO Patent No. 10043605, T. N. Ng, S. Kor, Y. Wu, August 7, 2018, cited 9x
34. Printed double-wrapped coil on paper for projective capacitance sensing, USPTO Patent No. 9874984, P. Mei, T. N. Ng, J. Veres, January 23, 2018, cited 5x
35. Bare die integration with printed components on flexible substrate without laser cut, USPTO Patent No. 10165677 B2, P. Mei, T. N. Ng, B. S. Krusor, G. L. Whiting, S. E. Ready, J. Veres, December 25, 2018, cited 22x
36. Structural designs for stretchable, conformal electrical interconnects, USPTO Patent No. 10427397 B2, T. N. Ng, P. Mei, C. L. Cobb, S. E. Ready, J. S. Pashchkewitz, October 1, 2019, cited 9x
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