

ROBERT A. NAWROCKI

Purdue University, Knoy 133, 401 N. Grant St, West Lafayette, IN 47907, USA

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<https://polytechnic.purdue.edu/facilities/lobe>

<https://scholar.google.co.jp/citations?user=Gie0Q30AAAAJ&hl=en>

RESEARCH INTERESTS

- Organic (polymer) and physically flexible electronics
- Biomedical applications / health care electronics (bio-electronic medicine)
- Neuromorphic (cognitive/adaptive) architecture and memristive systems
- Meta-, adaptive, and functional materials for soft and flexible robotics

EDUCATION AND RESEARCH

- | | |
|--|--------------------|
| Purdue University , West Lafayette, IN, USA
School of Engineering Technology
<i>Assistant Professor</i> | 2017 – |
| University of Tokyo , Tokyo, Japan
<i>Japanese Society for the Promotion of Science (JSPS) Research Fellow</i>
Project: “Ultra-thin and flexible neuromorphic organic e-skin for bioelectronics”
Supervisor: Prof. Takao Someya | 2015 – 2017 |
| University of Nova Gorica , Nova Gorica, Slovenia
<i>Postdoctoral Research Associate</i>
Project: “Carrier mobilities in blends of organic semiconductors and graphene”
Supervisor: Prof. Gvido Bratina | 2014 – 2015 |
| University of Colorado , Boulder, CO, USA
<i>Postdoctoral Research Associate</i>
Project: “Carrier mobilities in organic semiconductors and liquid crystals”
Supervisor: Prof. Sean Shaheen | 2013 – 2014 |
| University of Denver , Denver, CO, USA
<i>PhD in Engineering</i>
Dissertation: “Fabrication and Application of A Polymer Neuromorphic Circuitry Based on Polymer Memristive Devices and Polymer Transistors”
Supervisor: Prof. Richard Voyles and Prof. Sean Shaheen | 2011 – 2013 |
| Swiss Federal Institute of Technology (ETH) , Zürich, Switzerland
<i>Graduate Research Internship</i>
Research Topic: “Wireless Electrical Power to Sub-millimeter Robots”
Supervisor: Prof. Bradley Nelson | 2010 – 2011 |

University of Denver, Denver, CO, USA 2008 – 2011
M.S. in Computer Engineering

Thesis: “Simulation, Application, and Resilience of An Organic Neuromorphic Architecture, Made with Organic Memristors and Organic Field Effect Transistors”
 Supervisor: Prof. **Richard Voyles** and Prof. **Sean Shaheen**

New Jersey Institute of Technology, Newark, NJ, USA 2001 – 2004
B.S. in Computer Engineering

Areas of Concentration: Computer Communication
 Supervisor: Prof. **Roberto Rojas-Cessa**

Union Country College, Cranford, NJ, USA 1998 – 2001
A.S. in Engineering

Areas of Concentration: Computer Engineering

WORK EXPERIENCE

University of Denver, Denver, CO, USA 2009 – 2013
Graduate Teaching Assistant / Graduate Research Assistant

Research: OLEDs and eInk (electronic displays), water hammer (robotic propulsion), dielectrophoresis (improvement of mobility in organic semiconductors)

Comcast Corporation, Greenwood Village, CO, USA 2006 – 2009
TRAC Technician

Turner Engineering, Mountain Lakes, NJ, USA 2004 – 2006
Network Engineer, Systems Engineer, IT

United States Postal Service, Jersey City, NJ, USA 1997 – 2004
Distribution Clerk

PUBLICATIONS

Bai, H., Vyshniakova, K., Pavlica, E., Rocha Malacco, V.M., Yiannikouris, A., Yerramreddy, T.R., Donkin, S.S., Voyles, R.M., **Nawrocki, R.A.**, *Impedimetric, PEDOT:PSS-based Organic ElectroChemical Sensor for Detection of Histamine for Precision Animal Agriculture. IEEE Sensors Letters*, doi: [10.1109/LESENS.2020.3025162](https://doi.org/10.1109/LESENS.2020.3025162) 2020

Hosseini, M.J.M., Donati, E., Yokota, T., Lee, S., Indiveri, G., Someya, T., **Nawrocki, R.A.**, *Organic Electronics Axon-Hillock Neuromorphic Circuit: Towards Biologically Compatible, And Physically Flexible Integrate-And-Fire Spiking Neural Networks. Journal of Physics D: Applied Physics*, doi: [10.1088/1361-6463/abc585](https://doi.org/10.1088/1361-6463/abc585) 2020

- Delbruck, T., et al., **Nawrocki, R.A.**, Leon-Salas, W.D., *Lessons Learned the Hard Way. Proceedings of The IEEE International Symposium on Circuits and Systems (ISCAS)*, [doi: 10.1109/ISCAS45731.2020.9180983](https://doi.org/10.1109/ISCAS45731.2020.9180983) **2020**
- Mamer, T., Garcia, J., Leon-Salas, W.D., Voyles, R., **Nawrocki, R.A.**, Yokota, T., Someya, T., Ducharne, B., Newell, B., *Production of 3D Printed Flexible Strain Sensors. The ASME 2020 Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS)*, [doi: 10.1115/SMASIS2020-2235](https://doi.org/10.1115/SMASIS2020-2235) **2020**
- Rodriguez, D.G., Garcia, J., Ducharne, B., Voyles, R., **Nawrocki, R.A.**, Newell, B., *3D Printing of Flexible Sensing Actuators. The ASME 2020 Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS)*, [doi: 10.1115/SMASIS2020-2239](https://doi.org/10.1115/SMASIS2020-2239) **2020**
- Fan, J., Gonzalez, D.F., Garcia-Bravo, J., Newell, B., **Nawrocki, R.A.**, *The effects of additive manufacturing and poling techniques on PVdF thin films: Towards 3D printed functional materials. The ASME 2020 Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS)*, [doi: 10.1115/SMASIS2020-2245](https://doi.org/10.1115/SMASIS2020-2245) **2020**
- Yang, Y., **Nawrocki, R.A.**, Voyles, R.M., Zhang, H.H., *Modeling of an Internal Stress and Strain Distribution of an Inverted Staggered Thin-Film Transistor Based on Two-Dimensional Mass-Spring-Damper Structure. Computer Modeling in Engineering & Science*, [doi: 10.32604/cmes.2020.010165](https://doi.org/10.32604/cmes.2020.010165) **2020**
- Yang, Y., **Nawrocki, R.A.**, Voyles, R.M., Zhang, H.H., *Modeling of the Electrical Characteristics of an Organic Field Effect Thin-Film Transistor in Presence of the Bending Effects. Organic Electronics*, [doi: 10.1016/j.orgel.2020.106000](https://doi.org/10.1016/j.orgel.2020.106000) **2020**
- Gonzalez Rodriguez, D., Garcia, J., Voyles, R.M., **Nawrocki, R.A.**, Newell, B., *Characterization of 3D Printed Pneumatic Actuators. Soft Robotics*, under review **2020**
- Nawrocki, R.A.**, *Super- and Ultrathin Organic Field-Effect Transistors: from Flexibility to Super- and Ultraflexibility, Advanced Functional Materials*, [doi: 10.1002/adfm.201906908](https://doi.org/10.1002/adfm.201906908) **2019**
- Pavlica, E., Pastukhova, N., **Nawrocki, R.A.**, Ciesielski, A., Tkachuk, V., Samori, P., Bratina, G., *Enhancement of Charge Transport in Polythiophene Semiconducting Polymer by Blending with Graphene Nanoparticles, Chem Plus Chem*, [doi: 10.1002/cplu.201900219](https://doi.org/10.1002/cplu.201900219) **2019**
- Ayad, M., Aghamohammadi, N.R., **Nawrocki, R.A.**, Voyles, R.M., Kusuma, D., *Designer Polymers: Additive Manufacturing of Smart Materials as a Complement to Injection Molding*, SPE Annual Technical Conference and Exhibition, [in press](#) **2019**

- Warren, D.J., Hosseini, M.J.M, Nawrocki, R.A., *Organic Electronics in the Axon-Hillock Circuit, The Summer Undergraduate Research Fellowship (SURF) Symposium*, in press **2019**
- Nawrocki, R.A., Hanbit, J., Lee, S., Yokota, T., Sekino, M., Someya, T., *Self-Adhesive and Ultra-Conformable Sub 300-nm Dry Thin-Film Electrodes for Surface Monitoring of Biopotentials*, **Advanced Functional Materials**, doi: [10.1002/adfm.201803279](https://doi.org/10.1002/adfm.201803279) **2018**
- Zhang, H.H., Nawrocki, R.A., Li, Q., *On Basics and Applications of Multidisciplinary Engineering and Technology Education*, **Contemporary Educational Research: Education and Human Rights**, ISBN-13: [978-613-9-93799-8](https://www.isbn-international.org/product/978-613-9-93799-8) **2018**
- Ayad, M., Nawrocki, R.A., Voyles, R.M., Lee, J., Lee, H., Leon-Salas, W.D., *Nucleos: Toward Rapid-Prototyping of Robotic Materials That Can Sense, Think And Act*, **SMASIS 2018-8245**, doi:[10.1115/SMASIS2018-8245](https://doi.org/10.1115/SMASIS2018-8245) **2018**
- Balakuntala, M.V., Ayad, M., Voyles, R.M., White, R., Nawrocki, R.A., Sundaram, S., Priya, S., Chiu, G., Donkin, S., Min, B-C., Daniels, K., *Global Sustainability Through Closed-Loop Precision Animal Agriculture*, **Mechanical Engineering Magazine**, doi: [10.1115/1.2018-Jun-7](https://doi.org/10.1115/1.2018-Jun-7) **2018**
- Sheregar, D., Hung, V., Walker, J., Hoilett, O., Linnes, J., Nawrocki, R.A., *Thin Film Cocaine Sensors, The Summer Undergraduate Research Fellowship (SURF) Symposium*, <https://docs.lib.purdue.edu/surf/2018/Presentations/130/> **2018**
- Nawrocki, R.A., Voyles, R.M., Shaheen, S.E., *A Mini-Review of Neuromorphic Architectures and Implementations*, **IEEE Transactions on Electron Devices**, doi: [10.1109/ted.2016.2598413](https://doi.org/10.1109/ted.2016.2598413) **2016**
- Lee, S., Reuveny, A., Matsuhisa, N., Nawrocki, R.A., N., Yokota, T., Someya, T., *Enhancement of Closed-Loop Gain of Organic Amplifiers Using Double Gate Structures*, **IEEE Electron Device Letters**, doi: [10.1109/led.2016.2554159](https://doi.org/10.1109/led.2016.2554159) **2016**
- Nawrocki, R.A., Matsuhisa, N., Yokota, T., Someya, T., *300-nm Imperceptible, Ultraflexible, and Biocompatible e-Skin Fit with Tactile Sensors and Organic Transistors*, **Advanced Electronic Materials**, doi: [10.1002/aelm.201500452](https://doi.org/10.1002/aelm.201500452) **2016**
- Nawrocki, R.A., Pavlica, E., Čelić, N., Orlov, D., Mihailović, D., Bratina, G., *Fabrication of Poly(3-hexylthiophene) Nanowires for High-Mobility Transistors*, **Organic Electronics**, doi: [10.1016/j.orgel.2015.11.038](https://doi.org/10.1016/j.orgel.2015.11.038) **2016**
- Nawrocki, R.A., Voyles, R.M., Shaheen, S.E., *Neurons in Polymer: Hardware Neural Unites based on Polymer Memristive Devices and Transistors*, **IEEE Transactions on Electron Devices**, doi: [10.1109/ted.2014.2346700](https://doi.org/10.1109/ted.2014.2346700) **2014**

- Nawrocki, R.A.**, Galiger, E.M., Bailey, B.A., Ostrowski, D., Jiang, X., Voyles, R.M., Kopidakis, N., Olson, D.C., Shaheen, S.E., *An Inverted, Organic WORM Device Based on PEDOT:PSS with Very Low Turn-On Voltage*, **Organic Electronics**, doi: [10.1016/j.orgel.2014.05.003](https://doi.org/10.1016/j.orgel.2014.05.003) **2014**
- Nawrocki, R.A.**, *Fabrication And Application of A Polymer Neuromorphic Circuitry Based on Polymer Memristive Devices and Polymer Transistors*, **Doctor of Philosophy**, University of Denver **2014**
- Cui, Y., Voyles, R.M., **Nawrocki, R.A.**, Jiang, G., *The Morphing Bus: A New Paradigm in Peripheral Interconnect Bus*, **IEEE Transactions on Components, Packaging and Manufacturing Technology**, doi: [10.1109/tcpmt.2013.2273663](https://doi.org/10.1109/tcpmt.2013.2273663) **2013**
- Nawrocki, R.A.**, Voyles, R.M., Shaheen, S.E., *Polymer and Nanoparticle-Composite Bistable Devices: Physics of Operation and Initial Applications*, **Advances in Neuromorphic Memristor Science and Applications**, doi: [10.1007/978-94-007-4491-2_15](https://doi.org/10.1007/978-94-007-4491-2_15) **2012**
- Nawrocki, R.A.**, Shalaan, M., Shaheen, S. E., Lorenzon, N.M., *Monitoring Performance Degradation of Cerebellar Functions Using Computational Neuroscience Methods: Implications on Neurological Diseases*, **Public Library of Science**, doi: [10.1371/journal.pone.0045581](https://doi.org/10.1371/journal.pone.0045581) **2012**
- Nawrocki, R.A.**, Frutiger, D. R., Voyles, R.M., Nelson, B. J., *Wireless Electrical Power to Sub-millimeter Robots*, **IEEE International Conference on Intelligent Robotics and Automation**, doi: [10.1007/978-3-642-33515-0_31](https://doi.org/10.1007/978-3-642-33515-0_31) **2012**
- Nawrocki, R.A.**, *Simulation, Application, And Resilience of An Organic Neuromorphic Architecture, Made With Organic Bistable Devices And Organic Field Effect Transistors*, **Master of Science**, University of Denver **2011**
- Nawrocki, R.A.**, Yang, X., Shaheen, S.E., Voyles, R.M., *Structured Computational Polymers for a Soft Robot: Actuation and Cognition*, **IEEE International Conference on Robotics and Automation**, doi: [10.1109/icra.2011.5980122](https://doi.org/10.1109/icra.2011.5980122) **2011**
- Nawrocki, R.A.**, Shaheen, S.E., Voyles, R.M., *A Neuromorphic Architecture from Single Transistor Neurons With Organic Bistable Devices for Weights*, **IEEE International Joint Conference on Neural Networks**, doi: [10.1109/ijcnn.2011.6033256](https://doi.org/10.1109/ijcnn.2011.6033256) **2011**
- Nawrocki, R.A.**, Voyles, R.M., *Artificial Neural Network Performance Degradation Under Network Damage: Stuck-At Faults*, **IEEE International Joint Conference on Neural Networks**, doi: [10.1109/ijcnn.2011.6033255](https://doi.org/10.1109/ijcnn.2011.6033255) **2011**

- Nawrocki, R.A.**, Voyles, R.M., Shaheen, S.E., *Structured Computational Polymers for Safety, Security, and Rescue Robotics*, **IEEE International Symposium on Safety, Security and Rescue Robots**, doi: [10.1109/ssrr.2011.6106800](https://doi.org/10.1109/ssrr.2011.6106800) **2011**
- Benureau, F., Das, G.P, Kompella, V., **Nawrocki, R.A.**, Baldassarre, G., Nguyen, S.M., Mirolli, M, Sperati, V, Mannella, F, Fiore, V, Caligiore, D, Santucci, V, *Intrinsic Motivations for Forming Actions and Producing Goal Directed Behaviour*, **Capo Caccia Neuromorphic Workshop**, [ResearchGate](#) **2011**
- Nawrocki, R.A.**, Voyles, R.M., Shalaan, M., *Monitoring Artificial Neural Network Performance Degradation Under Network Damage*, **Artificial Neural Networks In Engineering**, doi: [10.1115/1.859599.paper13](https://doi.org/10.1115/1.859599.paper13) **2010**
- Nawrocki, R.A.**, Shaheen, S.E., Yang, X., Voyles, R.M., *Towards an All-Polymer Robot for Search and Rescue*, **IEEE International Symposium on Safety, Security and Rescue Robotics**, doi: [10.1109/ssrr.2009.5424154](https://doi.org/10.1109/ssrr.2009.5424154) **2009**
- Nawrocki, R.A.**, Abisaleh, D., Rojas-Cessa, R., *Implementation of Scheduling Algorithms for Input-Queued Packet Switches: an Undergraduate Senior Project Experience*, [Proceedings of the X Workshop, Iberchip](#) **2004**

INVITED TALKS

- Organic Electronics Axon-Hillock Neuron: Towards Flexible and Biocompatible Network of Spiking Neurons*, **European Materials Research Society (E-MRS)** **2021**
- Super-thin Organic Smart Electronics Skin*, **International Conference on Modern Materials & Technologies (CIMTEC)** **2021**
- Physically Flexible and Biological Compatible Demonstration of an Organic Electronics Axon-Hillock Neural Circuit*, **Materials Research Society (MRS)** **2020**
- Organic electronic Axon-Hillock neural circuit: towards biologically compatible, and physically flexible Integrate-and-Fire spiking neural networks*, **European Materials Research Society (E-MRS)** **2020**
- Polymer Neuromorphic Circuitry Based On Polymer Memristive Devices and Polymer Transistors: Design, Fabrication, and Application*, **1st Workshop on Organic Neuromorphic Devices** **2019**
- Organic BioElectronic Neural Interfaces*, **Purdue Honors College “How we Think: We’re Already Cyborgs”** **2019**
- Organic Bio-Electronics: Health Care and Soft Robotics*, **Central Indiana Section IEEE Engineering Conference (CIS-IEEE)** **2017**
- 300 nm imperceptible organic electronics: technology and the future of medical applications*, **Emerging Technologies; Communications, Microsystems, Optoelectronics, Sensors (ETCMOS)** **2017**

- Organic bio-electronics for health care applications*, **Japanese Society for the Promotion of Science (JSPS): Science Dialog** 2017
- Ultra-thin, ultra-flexible, ultra-conformable electronics for healthcare, biomedical applications*, **European Materials Research Society (E-MRS)** 2016
- Organic electronics artificial e-skin for human, prosthetic, and robotic application*, **Japanese Society for the Promotion of Science (JSPS): Science Dialog** 2016
- Memristive Synapses for Neuromorphic Systems*, **Capo Caccia Cognitive Neuromorphic Engineering Workshop** 2011

CONFERENCES AND PRESENTATIONS

- Flexible Thin-Film Sensor for Electrochemical Detection of Cocaine*, **Biomedical Engineering Society (BMES)** 2020
- Organic ElectroChemical Transistor-based Impedimetric Histamine Sensor*, **International Meeting on Chemical Sensors (IMCS)** 2020
- The effects of additive manufacturing and poling techniques on PVdF thin films: Towards 3D printed functional materials*, **The ASME 2020 Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS)** 2020
- 3D Printed of Flexible Sensing Actuators*, **The ASME 2020 Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS)** 2020
- Production of 3D Printed Flexible Strain Sensors*, **The ASME 2020 Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS)** 2020
- Confession Session: Lessons Learned the Hard Way*, **The IEEE International Symposium on Circuits and Systems (ISCAS)** 2020
- Polymer Neuromorphic Circuit Based on Polymer Memristive Devices and Polymer Transistors*, **The 1st Workshop on Neuromorphic Organic Devices** 2019
- Motion Artifact Free Monitoring of Biopotentials*, **International Winterschool on Bioelectronics Conference (BioEl)** 2019
- Sub-300 nm, self-adhesive and ultra-conformable dry thin-film electrodes for motion artifact-less monitoring of surface biopotentials*, **Materials Research Society (MRS)** 2018
- Motion Artifact Free Monitoring of EMG/ECG Biopotentials Using Sub-300 nm Self-Adhesive and Ultra-Conformable Au/Parylene Thin-Film Electrodes*, **International Mechanical Engineering Congress & Exposition (IMECE)** 2018
- NUCLEOS: Toward Rapid-Prototyping of Robotic Materials That Can Sense, Think and Act*, **American Society of Mechanical Engineers Conference on** 2018

Smart Materials, Adaptive Structures and Intelligent Systems (ASME-SMASIS)

- 300-nm High Gain Multi-Stage Organic CMOS Inverters*, **Solid State Devices and Materials (SSDM)** 2016
- 300-nm and ultra-flexible, skin-compatible organic transistors, pseudo-CMOS and CMOS amplifiers for artificial skin in medical applications*, **Materials Research Society (MRS)** 2016
- 300-nm Highly Conformable Organic Thin Film Transistor*, **International Thin-Film Transistor Conference (ITC)** 2016
- Time-of-flight photoconductivity in polymer/graphene blends*, **American Physical Society (APS)** 2015
- Organic Field Effect Transistors: Device Architectures and Fabrication*, **Organic Electronics Lecture at University of Colorado in Boulder** 2014
- Polymer Neuromorphic Circuitry: Biological Information Processing in Polymers*, **Graduate Research Symposium at University of Denver** 2013
- Polymer Electronics for Low Power Conformable Displays*, **Safety, Security and Rescue Robotics Workshop** 2012
- Organic Electronics*, **Industry Day at University of Denver** 2012
- Towards an All-Polymer Robot for Search and Rescue*, **Safety, Security and Rescue Robotics Workshop (SSRRC)** 2009

POSTERS

- Wearables Sensors for Monitoring Substance Use Disorder*, **Indiana Clinical and Translational Sciences Institute (CTSI) Retreat at Purdue University** 2020
- 300-nm organic transistors and sensors for surface biopotential monitoring*, **Mi-Bio Summit on Flexible and Stretchable Bioelectronics** 2019
- Organic Electronics in the Axon-Hillock Circuit*, (Warren, D.J.) **Summer Undergraduate Research Fellowship at Purdue University** 2019
- Thin Film Opioid Sensors*, (Sheregar, D.) **Summer Undergraduate Research Fellowship at Purdue University** 2018
- 300-nm ultra-flexible and skin-compatible organic transistors for e-skin*, **Symposium on Supramolecular Chemistry and Functional Materials** 2016
- Organic Semiconductors for Space Flight Applications*, **AeroSpace Ventures Day at University of Colorado in Boulder** 2014

<i>PaperBots – Rapid Prototyping of Inexpensive Robots” and “Structured Computational Polymers, Undergraduate Outreach at Purdue University</i>	2013
<i>Deposition of Organic Photovoltaic Thin Films via Blade-coating, Undergraduate Outreach at University of Denver</i>	2012
<i>Monitoring Performance Degradation of Cerebellar Functions Using Computational Neuroscientific Methods, Front Range Neuroscience Group</i>	2009
<i>The time evolution of entropy during the training of neural networks, Front Range Neuroscience Group</i>	2008

RESEARCH FUNDING

Office of Naval Research (\$508k)	2021
Laboratory and University Core Facility Research Equipment (\$65k)	2020
Purdue Polytechnic Institute Equipment Seed Grant (\$8k)	2019
Purdue Institute for Integrative Neuroscience (\$30k of \$150k)	2019
Laboratory and University Core Facility Research Equipment (\$150k)	2019
Laboratory and University Core Facility Research Equipment (\$170k)	2019
Scheme of Promotion of Academic and Research Collaboration (\$95k of \$140k)	2019
National Institute of Food & Agriculture (NRI: 18089569; \$20k of \$400k)	2018
RoSeHUB (17000570; \$55k)	2018
CUBoulder Center for Multifunctional Materials (\$7.5k)	2018
Japan Society for the Promotion of Science (P15062; \$80k)	2015
National Science Foundation Scholarship (1053249; \$27k)	2010

AWARDS AND HONORS

Office of Naval Research, Young Investigator	2021
Japanese Society for the Promotion of Science, Postdoctoral Fellow	2015
Habilitation from University of Nova Gorica	2014
University of Denver Fellowship	2012, 2013
University of Denver Best Teaching Assistant Award	2012
IEEE Safety Security and Rescue Robotics Symposium Best Paper Award	2011
New Jersey Institute of Technology Summa Cum Laude Award	2004
Union County Alumni Prize	2001
Post-Day Memorial Award	2001

SYNERGISTIC ACTIVITIES

Guest Editor in Special Issue of Advanced Electronics Materials	2021
Reviewer: National Science Foundation, Graduate Research Fellowship Program	2020
Review Editor: Frontiers In Nanotechnology: Nanodevices	2019 –
Associate Editor: IEEE International Conference on Robotics and Automation	2018
Invited Panelist: CIS-IEEE EnCON	2017
Assistant Editor: IEEE Safety Security and Rescue Robotics Workshop	2009

REVIEWED JOURNALS & CONFERENCES

AAAS: Science Advances
 ASME: Journal of Medical Devices; Artificial Neural Networks In Engineering
 Elsevier: Journal of Microelectronics, Thin Solid Films
 IEEE: Transactions on Neural Networks; International Conference on
 Robotics and Automation; International Conference on Safety,
 Search and Rescue Robotics
 MIT Press: Neural Computing
 MPL: Nature Communications, Nature Electronics
 USNAS: Proceedings of the National Academy of Sciences
 Wiley: Advanced Materials, Advanced Functional Materials

TEACHING EXPERIENCE

Purdue University, West Lafayette, IN, USA **2018 –**
Instructor
 Courses Taught: Data Acquisition and Systems Control, DC and Pulse Electronics

University of Nova Gorica, Nova Gorica, Slovenia **2014 – 2015**
Teaching Assistant
 Courses Taught: Mathematical Physics II

University of Denver, Denver, CO, USA **2009 – 2012**
Graduate Teaching Assistant
 Courses Taught: Electrical Circuits I & II, Engineering Concepts I, II & III,
 Digital Design, Engineering Applications, Engineering Analysis, Climate
 Science

New Jersey Institute of Technology, Newark, NJ, USA **2002**
Undergraduate Teaching Assistant
 Courses Taught: Physics, Mathematics, Computers, Robotics, English,
 Chemistry, Electronics

SUPERVISED STUDENTS AND POSTDOCTORAL RESEARCHERS

Katia Vyshniakova **2018 –**
 Postdoctoral Researcher *at Purdue University, USA*
 Organic Electro-Chemical Transistor-based chemical sensor and graphene synthesis

Xin Ma **2019 –**
 Postdoctoral Researcher *at Purdue University, USA*
 4D printing of structures and electronics; co-advised with prof. Richard Voyles

Huiwen Bai **2019 –**
 PhD *in Engineering Technology at Purdue University, USA*
 Organic electrochemical sensors

- Mohammad Javad Mirshojaeian Hosseini **2018 –**
PhD in Engineering Technology at Purdue University, USA
Neuromorphic Organic Electronics e-skin for soft robotic tactile interaction
- Jinsheng Fan **2018 –**
PhD in Engineering Technology at Purdue University, USA
Organic electronics 3D metamaterial
- Datta Sheregar **2018 –**
BS and MS in Engineering Technology at Purdue University, USA
Opioid sensor; 3D printing of electronics; co-advised with prof. Richard Voyles
- Naveed Reza Aghamohammadi **2019 – 2021**
PhD in Engineering Technology at Purdue University, USA
4D printing of structures and electronics; co-advised with prof. Richard Voyles
- Megan Baker **2019 – 2021**
MS in Biomedical Engineering at Purdue University, USA
Organic electrochemical sensors; co-advised with prof. Krishna Jayant
- Moshan Guo **2019 – 2020**
Exchange student *from Tsinghua University, Beijing, China*
4D printing of structures and electronics; co-advised with prof. Richard Voyles
- Egon Pavlica **2018 – 2019**
Postdoctoral Researcher *at Purdue University, USA*
Organic Electro-Chemical Transistor-based chemical sensor
- Shih Hsuan (Vick) Hung **2018 – 2020**
BS in Engineering Technology at Purdue University, USA
Organic electronic thin film transistor circuits
- Saw Yan Naung **2018 – 2019**
BS in Mechanical Engineering at Purdue University, USA
Piezoelectric tactile organic e-skin
- Charles A Witt **2018 – 2018**
BS in Engineering Technology at Purdue University, USA
sEMG and neural network circuit for prosthetic control
- Joshua Bell **2018 – 2018**
BS in Engineering Technology at Purdue University, USA
Inductive coupling for power and data transmission for electronic skin applications

- Marissa Landa **2018 – 2018**
BS in Engineering Technology at Purdue University, USA
Piezoelectric tactile sensor and OFET active matrix electronic skin
- Hanbit Jin **2016 – 2017**
PhD in Engineering at the University of Tokyo, Japan
Thin film biopotential sensors for bio-interfacing
- Sunghoon Lee **2016 – 2017**
PhD in Engineering at the University of Tokyo, Japan
Surface treatment and device architecture of organic electronic amplifiers
- Anže Peternel **2015 – 2015**
BS in Physics at University of Nova Gorica, Slovenia
Surface treatments methodologies (such as Self-Assembling Monolayers) for organic semiconductors and their effects on carrier mobilities
- Raveendra Babu Penumala **2014 – 2015**
PhD in Physics at University of Nova Gorica, Slovenia
Properties of charge carriers in organic semiconductors and their blends with graphene
- Jinta Mathew **2014 – 2015**
PhD in Physics at University of Nova Gorica, Slovenia
Properties of organic semiconductors using AFM and SEM characterization
- Eric Carlson **2014 – 2014**
PhD in Physics at University of Colorado in Boulder, CO, USA
Organic semiconductors and liquid crystals in OFET arrangement
- Matthew Watwood **2014 – 2014**
MS in Computer Science at University of Denver, CO, USA
Analysis of performance of artificial neural network during training
- Victor Palacios **2014 – 2014**
BS in Electrical Engineering at University of Colorado Boulder, CO, USA
Surface and film morphology of spin and blade coated organic semiconductors in OFET and OPV arrangement
- Jade Irizarry-Swordy **2013 – 2013**
BS in Electrical Engineering at University of Denver, CO, USA
Bulk co-polymers, doped with fullerenes, with the aim of developing self-organizing organic memristive devices
- Erin Galiger **2011 – 2013**
BS in Computer Engineering at University of Denver, CO, USA
AFM and thin film deposition of organic materials, with the goal of

understanding how process conditions relate to film quality and device performance in organic photovoltaics and organic field effect transistors

Rachelle Cobb

2010 – 2011

BS in Computer Engineering at Rose-Hulman, IN, USA

Fabrication and characterization of OLEDs, with the aim of encapsulating with standard polymeric materials

Ryan McDonald

2009 – 2009

BS in Computer Engineering at University of Denver, CO, USA

Fabrication and characterization of OLEDs, with the aim of encapsulating with standard polymeric materials

VIDEO / MULTIMEDIA

“Laboratory of Organic Bio-Electronics; Overview” **YouTube**

2020

(https://polytechnic.purdue.edu/sites/default/files/files/LOBE_research.mp4)

“Laboratory of Organic Matter Physics; Overview” **GoTV**

2015

(<https://www.youtube.com/watch?v=FaWFtJL63e0>)

“Can liquids think?” (given by *Richard Voyles*) **TEDxDU**

2011

(<http://tedxtalks.ted.com/video/TEDxDU-Richard-Voyles-Can-liqui>)

LANGUAGES

English – speak, read, and write fluently

Polish – native language

Japanese – speak and read very poorly

Slovenian – speak and read poorly

Russian – speak and read poorly

CERTIFICATE

Cisco Certified Network Associate (CCNA): Cisco ID CSC011174973

MEMBERSHIPS

American Society of Mechanical Engineers (ASME)

Institute of Electrical and Electronics Engineering (IEEE)

Materials Research Society (MRS)