

# ROBERT A. NAWROCKI

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## RESEARCH INTERESTS

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

## EDUCATION AND RESEARCH

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

**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., 2020

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/LSENS.2020.3025162](https://doi.org/10.1109/LSENS.2020.3025162)

Hosseini, M.J.M., Donati, E., Yokota, T., Lee, S., Indiveri, G., Someya, T., 2020

**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)

- 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

- 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**
- 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 1<sup>st</sup> 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 Smart Materials, Adaptive Structures and Intelligent Systems (ASME-SMASIS)** 2018

*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
- PaperBots – Rapid Prototyping of Inexpensive Robots” and “Structured Computational Polymers*, **Undergraduate Outreach at Purdue University** 2013
- Deposition of Organic Photovoltaic Thin Films via Blade-coating*, **Undergraduate Outreach at University of Denver** 2012
- Monitoring Performance Degradation of Cerebellar Functions Using Computational Neuroscientific Methods*, **Front Range Neuroscience Group** 2009



*The time evolution of entropy during the training of neural networks*, **Front Range Neuroscience Group** **2008**

### RESEARCH FUNDING

Purdue Institute for Integrative Neuroscience (\$30k of \$150k)	<b>2020</b>
Laboratory and University Core Facility Research Equipment (\$65k)	<b>2020</b>
Purdue Polytechnic Institute Equipment Seed Grant (\$8k)	<b>2019</b>
Purdue Institute for Integrative Neuroscience (\$30k of \$150k)	<b>2019 – 2020</b>
Laboratory and University Core Facility Research Equipment (\$150k)	<b>2019</b>
Laboratory and University Core Facility Research Equipment (\$170k)	<b>2019</b>
Scheme of Promotion of Academic and Research Collaboration (\$95k of \$140k)	<b>2019 – 2021</b>
National Institute of Food & Agriculture (NRI: 18089569; \$20k of \$400k)	<b>2018 – 2021</b>
RoSeHUB (17000570; \$55k)	<b>2018 – 2019</b>
CUBoulder Center for Multifunctional Materials (\$7.5k)	<b>2018</b>
Japan Society for the Promotion of Science (P15062; \$80k)	<b>2015 – 2017</b>
National Science Foundation Scholarship (1053249; \$27k)	<b>2010 – 2011</b>

### AWARDS AND HONORS

Habilitation from University of Nova Gorica	<b>2014</b>
University of Denver Fellowship	<b>2012, 2013</b>
University of Denver Best Teaching Assistant Award	<b>2012</b>
IEEE Safety Security and Rescue Robotics Symposium Best Paper Award	<b>2011</b>
New Jersey Institute of Technology Summa Cum Laude Award	<b>2004</b>
Union County Alumni Prize	<b>2001</b>
Post-Day Memorial Award	<b>2001</b>

### SYNERGISTIC ACTIVITIES

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

### 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
- Naveed Reza Aghamohammadi* **2019 –**  
PhD *in Engineering Technology at Purdue University, USA*  
4D printing of structures and electronics; co-advised with prof. Richard Voyles
- Megan Baker* **2019 –**  
PhD *in Biomedical Engineering at Purdue University, USA*  
Organic electrochemical sensors; co-advised with prof. Krishna Jayant
- Moshan Guo* **2019 –**

- 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
- 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
- Shih Hsuan (Vick) Hung **2018 –**  
*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  
**2015 – 2015**
- Anže Peternel  
*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  
**2014 – 2015**
- Raveendra Babu Penumala  
*PhD in Physics at University of Nova Gorica, Slovenia*  
Properties of charge carriers in organic semiconductors and their blends with graphene  
**2014 – 2015**
- Jinta Mathew  
*PhD in Physics at University of Nova Gorica, Slovenia*  
Properties of organic semiconductors using AFM and SEM characterization  
**2014 – 2015**
- Eric Carlson  
*PhD in Physics at University of Colorado in Boulder, CO, USA*  
Organic semiconductors and liquid crystals in OFET arrangement  
**2014 – 2014**
- Matthew Watwood  
*MS in Computer Science at University of Denver, CO, USA*  
Analysis of performance of artificial neural network during training  
**2014 – 2014**
- Victor Palacios  
*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  
**2014 – 2014**
- Jade Irizarry-Swordy  
*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  
**2013 – 2013**
- Erin Galiger  
*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  
**2011 – 2013**
- Rachelle Cobb  
*BS in Computer Engineering at Rose-Hulman, IN, USA*  
Fabrication and characterization of OLEDs, with the aim of encapsulating with standard polymeric materials  
**2010 – 2011**
- 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 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)