

# Elaheh Kheirandish

[kheiran2@uwm.edu](mailto:kheiran2@uwm.edu)

Dept. Electrical Engineering, University of Wisconsin-Milwaukee  
B1985-3200 N Cramer St., Milwaukee, WI 53211-3029

## EDUCATION

---

- 2015 - present      University of Wisconsin - Milwaukee, Milwaukee, WI, USA  
PhD candidate in Electrical Engineering, GPA 3.97/4.00  
Electrical Engineering major, Physics minor  
Advisor: Prof. Nikolai Kouklin  
Thesis: Transport, photoluminescence and photoconduction characteristics of free-standing two-dimensional  $\gamma$ -alumina and Ti/ $\gamma$ -alumina super lattice grown by graphene-assisted Atomic Layer Deposition
- 2010 - 2014      Shiraz University, Shiraz, Iran  
B.S. in Electrical Engineering, Electronics major

## WORK & INTERNSHIP EXPERIENCE

---

- 2015-20      **Research Assistant**, Nanotechnology Research Laboratory, University of Wisconsin-Milwaukee, WI, USA  
**Teaching Assistant**, Electrical Engineering department, College of Engineering and Applied Sciences, University of Wisconsin-Milwaukee, WI, USA  
(Analytical Methods in Engineering, Spring 2016, Fall 2018, Spring 2019; Electronics II laboratory, Fall 2017; MATLAB Training Instructor, Spring 2016, Fall 2018, Spring 2019)  
**Grader**, Electrical Engineering department, College of Engineering and Applied Sciences, University of Wisconsin-Milwaukee, WI, USA  
(Analytical Methods in Engineering, Fall 2017, Fall 2019, Spring 2020; Electrical Circuits II, Summer 2019)
- 2012-12      **Teaching Assistant**, Electric Laboratory, School of Electrical and Computer Engineering, Shiraz University, Shiraz, Iran, Spring 2012
- 2018-19      **Intern**, SafeLi LLC, Milwaukee, WI, USA, Summer 2018-Winter 2019
- 2013-13      **Intern**, D.G. Dena Company, Shiraz, Iran, Summer 2013

## AWARDS & HONORS

---

- Graduate Student Excellence Fellowship (GSEF) award, University of Wisconsin-Milwaukee, Fall 2020 & Spring 2021
- Two Chancellor's Graduate Student Awards, Spring 2020, University of Wisconsin-Milwaukee
- Distinguished Graduate Student Fellowship, University of Wisconsin-Milwaukee, Fall 2019 & Spring 2020,
- University of Wisconsin-Milwaukee Graduate School Travel Award for Emerging Research Forum Oral Presentation at Nano World Boston Conference, Spring 2019
- University of Wisconsin-Milwaukee College of Engineering and Applied Sciences Travel Award for Emerging Researchers Forum Oral Presentation at Nano World Boston Conference, Spring 2019
- Graduate Student Excellence Fellowship (GSEF) award, University of Wisconsin-Milwaukee, Fall 2018 & Spring 2019
- Chancellor's Graduate Student Award, Spring 2018, University of Wisconsin-Milwaukee
- First Place in the 2017-Advanced Analysis Facility Graduate Student Research Competition, University of

Wisconsin-Milwaukee, Fall 2017

- Chancellor's Graduate Student Award, Spring 2016, University of Wisconsin-Milwaukee
- Chancellor's Graduate Student Award, Fall 2016, University of Wisconsin-Milwaukee
- Third Place in University of Wisconsin-Milwaukee Research Foundation Fresh Idea Campaign, University of Wisconsin-Milwaukee, Fall 2015
- Chancellor's Award, Fall 2015, University of Wisconsin-Milwaukee

#### PROFESSIONAL SERVICES

---

- Vice President of the Society for Applied Spectroscopy student section, University of Wisconsin-Milwaukee (2018-2019)
- Graduate School Representative, University of Wisconsin-Milwaukee, Milwaukee, WI (2018)
- Peer review referee for the Journal of Physics & Chemistry of Solids

#### PRESENTATIONS & TALKS

---

##### **Oral presentations**

1. (Invited speaker) E. Kheirandish, Photoluminescence and Charge transport Characteristics of Nano-columnar TiO<sub>2</sub> Films prepared by RF sputtering on Nanoporous Al<sub>2</sub>O<sub>3</sub>, 2<sup>nd</sup> International Conference on Materials Science and Engineering, San Francisco, CA (November 2020)
2. (Conference talk) E. Kheirandish, Free Standing Quasi Two-Dimensional  $\gamma$ -Alumina Grown by Atomic Layer Deposition, 62<sup>nd</sup> Electronic Materials Conference, Columbus, Ohio (June 2020)
3. (Invited speaker) E. Kheirandish, Free-standing two-dimensional alumina grown by graphene-assisted Atomic Layer Deposition, Massachusetts Institute of Technology (MIT), Cambridge, MA (April 2019)
4. (Conference talk) E. Kheirandish, Free-standing two-dimensional alumina grown by graphene-assisted Atomic Layer Deposition, Nano World Boston Conference, Newton, MA (April 2019)
5. (Seminar talk) E. Kheirandish, Synthesis, Photoluminescence and Charge transport properties of Nano-columnar Titanium Dioxide films produced by sputtering on Au/Alumina Nano-templates, Advanced Analysis Facility, University of Wisconsin-Milwaukee (December 2017)

##### **Poster presentations**

1. E. Kheirandish, Free-standing two-dimensional alumina grown by graphene-assisted Atomic Layer Deposition, Student Research Poster Competition, University of Wisconsin-Milwaukee (April 2019)
2. E. Kheirandish, Free-standing two-dimensional alumina grown by graphene-assisted Atomic Layer Deposition, Student Research Poster Competition, University of Wisconsin-Milwaukee (April 2018)
3. E. Kheirandish, Synthesis, Photoluminescence and Charge transport properties of Nano-columnar Titanium Dioxide films produced by sputtering on Au/Alumina Nano-templates, 2017 AVS Prairie Chapter Symposium, Milwaukee (September 2017)
4. E. Kheirandish, TiO<sub>2</sub> thin-film on nanoporous Alumina; fabrication and characterization Poster, Student Research Poster Competition, University of Wisconsin-Milwaukee (April 2017)

#### SKILLS

---

- Scanning Electron Microscopy (SEM)
- High Resolution Transmission Electron Microscopy (HRTEM)
- Atomic Force Microscopy (AFM)

- Atomic Layer Deposition (ALD)
- Chemical Vapor Deposition (CVD)
- E-Beam Deposition
- DC-Plasma Sputtering
- Energy-dispersive X-ray spectroscopy (EDX)
- X-ray Diffraction (XRD)
- Raman Spectroscopy
- Photoluminescence Spectroscopy (PL)
- Python, MATLAB, Origin Lab

#### RESEARCH & INTERNSHIP PROJECTS

---

- Study and characterization of luminescent quasi-2D- $\gamma$ -alumina and Ti/ $\gamma$ -alumina superlattice using PL, Nanotechnology Research Laboratory, University of Wisconsin-Milwaukee, Milwaukee, WI, Spring and Summer 2020
- Fabrication and study of spectral characteristics of doped and undoped quasi-2D- $\gamma$ -alumina using ALD, Nanotechnology Research Laboratory, University of Wisconsin-Milwaukee, Milwaukee, WI, Fall 2019
- In situ TEM Investigation of Temperature controlled crystallization of ALD grown TiO<sub>2</sub> few nanometer thick films, Nanotechnology Research Laboratory, University of Wisconsin-Milwaukee, Milwaukee, WI, Summer 2019
- RAMAN, SAED and HRTEM study of Cu-Cd<sub>3</sub>As<sub>2</sub> heterojunction, Nanotechnology Research Laboratory, University of Wisconsin-Milwaukee, Milwaukee, WI, Summer 2019
- Investigation of High temperature CVD based Sulfurization reactions of TiO<sub>2</sub> nanopowder, Nanotechnology Research Laboratory, University of Wisconsin-Milwaukee, Milwaukee, WI, Spring 2019
- Analysis and quality assessment of reduced graphene monoxide using TEM and automation of the quality assessment process on Digital Micrograph, SafeLi LLC, WI, Summer & Fall 2018
- Study of the morphology & crystal structure of 2D-Alumina nanosheets using TEM, Nanotechnology Research Laboratory, University of Wisconsin-Milwaukee, Milwaukee, WI, Spring & Summer 2018
- Study of Size down-tuning of Ternary II-VI Alloyed Quantum Dots by Alcohol using PL, PLE, SEM, EDX & TEM, Nanotechnology Research Laboratory, University of Wisconsin-Milwaukee, Milwaukee, WI, Spring & Summer 2018
- Study of Light emission of nanoporous GaN produced by a top-down, non-lithographical nanopatterning using PL, PLE, UV-Vis, Nanotechnology Research Laboratory, University of Wisconsin-Milwaukee, Milwaukee, WI, Spring 2018
- Study of the electrical & optical properties of 2D-Alumina nanosheets using EDX, SEM, Raman Spectroscopy, PL, PLE, UV-Vis, Keithley source meter, Nanotechnology Research Laboratory, University of Wisconsin-Milwaukee, Milwaukee, WI, Summer & Fall 2017
- Fabrication & study of Cobalt coated Cd<sub>3</sub>As<sub>2</sub> by E-beam deposition, EDX, SEM, Nanotechnology Research Laboratory, University of Wisconsin-Milwaukee, Milwaukee, WI, Spring 2017
- Study of the electrical & optical properties of one dimensional columnar TiO<sub>2</sub> thin film on nanoporous Alumina using SEM, RAMAN, EDX, PL, ALD, Optical laser microscope, Keithley source meter, Nanotechnology Research Laboratory, University of Wisconsin-Milwaukee, Milwaukee, WI, Fall 2016
- Study of optical & thermoelectric properties of Cd<sub>3</sub>As<sub>2</sub> Platelets & phosphorous doped thin films using EDX, SEM, Keithley source meter, Lock-in-Amplifier, Nanotechnology Research Laboratory, University of Wisconsin-Milwaukee, Milwaukee, WI, Summer 2016

- Study of electrical & optical properties of ZnO nanowire using micromanipulators, Keithley source meter, EDX, SEM, Nanotechnology Research Laboratory, University of Wisconsin-Milwaukee, Milwaukee, WI, Spring 2016
- Study of strain influence on the resistance of the GST nanowire using micromanipulators, Keithley source meter, EDX, SEM, Nanotechnology Research Laboratory, University of Wisconsin-Milwaukee, Milwaukee, WI, Fall 2015
- Simulation of Ammonia Gas Sensor Based on Ag Nanowire using Quantum Wise (VNL & ATK), School of Electrical and Computer Engineering, Shiraz University, Shiraz, Iran, Spring 2014
- Laser Driver Assembly and Testing, Photonics Laboratory, School of Electrical and Computer Engineering, Shiraz University, Shiraz, Iran, Spring 2014
- Test and research on test techniques and circuit designs for calibrating and testing of EKG leads, D.G. Dena Company (bioinformatics company), Shiraz, Iran, Summer 2013

#### PUBLICATIONS

---

- E. Kheirandish, J. C. Marnocha, N. A. Kouklin, Controlling opto-electronic characteristics of ternary II-VI alloyed quantum dots: Alcohol processing assay, accepted for publication at Material Research Express (2020)
- E. Kheirandish, M. Schofield, M. Gajdardziska-Josifovska, N. Kouklin, Quasi-2D Crystalline  $\gamma$ -Alumina Grown by Graphene-Assisted Atomic Layer Deposition, Advanced Material Interfaces, 2000561 (2020)
- E. Kheirandish, J. Liang, N. A. Kouklin, Light Emission by Nanoporous GaN produced by a top-down, Non-lithographical Nanopatterning, Journal of Nanomaterials, Vol 2018, 5684150 (2018)
- E. Kheirandish, T. Hosseini, N. Yavarishad, N. Kouklin, Photoluminescence and charge-transport characteristics of nano-columnar titanium dioxide films prepared by rf-sputtering on alumina templates, Materials Research Express, 2 (5), 026413 (2018)
- N. Yavarishad, T. Hosseini, E. Kheirandish, C. Webber, N. Kouklin, Room-temperature, self-powered energy photo-detector based on the optically-induced Seebeck effect in  $\text{Cd}_3\text{As}_2$ , Applied Physics Express, 10 (5), 052201 (2017)

#### STUDENTS ADVISED/TRAINED

---

##### **Undergraduate Students, Support for Undergraduate Research Fellows (SURF) program (total of 5)**

- Skyler Sandlin, Fall 2019
  - Instruction and laboratory supervision/training for one undergraduate student for study of "Fabrication of electrodes for precise measurements", Nanotechnology Research Laboratory, College of Engineering and Applied Sciences, University of Wisconsin-Milwaukee, Fall 2019
- Yuting Lin, currently at PhD program in UW-Milwaukee, Spring 2019
  - Instruction and laboratory supervision/training for one undergraduate student for study of "Synthesis and characterization of sulfur doped  $\text{TiO}_2$  nanopowder", Nanotechnology Research Laboratory, College of Engineering and Applied Sciences, University of Wisconsin-Milwaukee, Spring 2019
- Ryan James Olson, Spring 2018
  - Instruction and laboratory supervision/training for one undergraduate student for study of "Electrical and optical properties of CdSeS/ZnS Quantum dots", Nanotechnology Research Laboratory, College of Engineering and Applied Sciences, University of Wisconsin-Milwaukee, Spring 2018
- Jacob Lee Alward, currently at MS program in North Carolina State University, Summer 2016
  - Instruction and laboratory supervision/training for two undergraduate students for study of "Optical properties of graphene coated phosphorous doped  $\text{Cd}_3\text{As}_2$  thin films", Nanotechnology Research

Laboratory, College of Engineering and Applied Sciences, University of Wisconsin-Milwaukee, Summer 2016

- Ryne Robert Puffer, Summer 2016
  - Instruction and laboratory supervision/training for two undergraduate students for study of "Optical properties of graphene coated phosphorous doped  $\text{Cd}_3\text{As}_2$  thin films", Nanotechnology Research Laboratory, College of Engineering and Applied Sciences, University of Wisconsin-Milwaukee, Summer 2016

#### **Undergraduate Labs/Courses Project Supervision/Teaching:**

- Instruction and laboratory supervision, "Fabrication and characterization of dye-sensitized solar cell (DSSC)", EE890-Introduction to Bio-Nanoengineering, EE588-Fundamentals of Nanotechnology class, Nanotechnology Research Laboratory, College of Engineering and Applied Sciences, University of Wisconsin-Milwaukee, Fall 2017

#### **Graduate Student Project Supervision (total of 3)**

- Yuting Lin, Spring 2020, Fall 2019
  - Instruction and laboratory supervision/training for one graduate student for study of "Charge transport of CVD grown ZnO nanowires", Nanotechnology Research Laboratory, College of Engineering and Applied Sciences, University of Wisconsin-Milwaukee, Spring 2020
  - Instruction and laboratory supervision/training for one graduate student for study of "CVD growth and photoluminescence study of ZnO nanowires", Nanotechnology Research Laboratory, College of Engineering and Applied Sciences, University of Wisconsin-Milwaukee, Fall 2019
- John Casey Marnocha, Fall 2018, Spring 2018, Fall 2017
  - Instruction and laboratory supervision/training for one graduate student for study of "Size Down Tuning of Ternary II-VI Alloyed Quantum dots by Alcohol" Nanotechnology Research Laboratory, College of Engineering and Applied Sciences, University of Wisconsin-Milwaukee, Fall 2018, Spring 2018, Fall 2017
- Kavya Shree Kumar, Spring 2016, Fall 2015
  - Instruction and laboratory supervision/training for one graduate student for study of "Electrical and optical properties of ZnO nanowires" Nanotechnology Research Laboratory, College of Engineering and Applied Sciences, University of Wisconsin-Milwaukee, Spring 2016
  - Instruction and laboratory supervision/training for one graduate student for study of "Electrical and optical properties of GST nanowires" Nanotechnology Research Laboratory, College of Engineering and Applied Sciences, University of Wisconsin-Milwaukee, Fall 2015