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Javad G. Azadani
Permanent Resident of the USA

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SUMMARY

- Ph.D. candidate with more than 6 years of experience in electronics, optoelectronics, and spintronics.
- Strong background and knowledge in semiconductor materials and devices, semiconductor physics, and quantum materials.
- Managed and accomplished several multidisciplinary projects in different research groups.
- 6 years of experience in numerical simulations and data analysis.
- Published and accomplished projects in peer-reviewed journals and presented in conferences.

EDUCATION

Ph.D. in Electrical Engineering, University of Minnesota, Minneapolis MN 2015-2020
GPA: 3.74/4
M.Sc. in Physics, University of Alabama, Tuscaloosa AL 2013-2015
GPA: 3.87/4
B.Sc. in Physics, Shiraz University, Iran 2004-2009

RESEARCH EXPERIENCE

Graduate Research Assistant University of Minnesota, MN Sept. 2015- present

- Density functional theory (DFT) exploration of two-dimensional semiconductors and heterostructures in order to investigate their applicability for the nanoelectronics and optoelectronics devices.
- Developed a linear response model to predict energy band alignment of two-dimensional vertical heterostructures.
- Realized three-dimensional flat band in magnetic spinel compounds with insulator-metal transition and tunable anomalous Hall effect.
- Researched spin-momentum locking in topological insulators with rotational defects.
- Studied wave functions and electronic properties of TMD heterostructure in presence of an applied electric field.
- Working on two-dimensional materials database as a part of Midwest Nano Infrastructure Corridor (MINIC) program to support the fabrication of new micro- and nanoscale devices for a wide range of applications.
- Mentored undergraduate and graduate research assistants and assisted visiting scholars.

Graduate Research Assistant University of Alabama, AL Nov. 2013- Jul. 2015

- Fulfilled a successful study of magnetic properties of half-metallic Heusler alloy superlattices.
- Filed a patent on layered Heusler alloys and methods for the fabrication, supported by DARPA and NSF.

TECHNICAL SKILLS

Simulation Package: VASP, Wannier90
Programs: MATLAB, Python, JMP, Minitab

SELECTED PUBLICATIONS

- J. G. Azadani, et al. "Simple linear response model to predicting energy band alignment of two-dimensional vertical heterostructure". arXiv (2020)
- J. G. Azadani, W. Jiang, J. P. Wang, T. Low. "Ferromagnetic phase of spinel compound MgV_2O_4 and its spintronics properties". Phys. Rev. B. (2020)
- A. Chaves, J. G. Azadani, et al. "Bandgap engineering of two-dimensional semiconductor materials". npj 2D Materials and Applications (2020)
- R. Maiti, C. Patil, M. Saadi, T. Xie, J. G. Azadani, et al, "Strain-engineered high-responsivity $MoTe_2$ photodetector for silicon photonic integrated circuits". Nature Photonics (2020)
- R. Ma, H. Zhang, Y. Yoo, Z. Degregorio, L. Jin, P. Golani, J. G. Azadani, *et al.* "$MoTe_2$ Lateral homojunction field-effect transistors fabricated using flux-controlled phase engineering". ACS Nano (2019)
- A. Chaves, J. G. Azadani, *et al*. "Electrical Control of Excitons in Van der Waals Heterostructures With Type-II Band Alignment". Phys. Rev. B. (2018)
- V. O. Ozcelik, J. G. Azadani, *et al*. "Band Alignment of Two-Dimensional Semiconductors for Designing Heterostructures With Momentum Space Matching". Phys. Rev. B. (2016)
- J. G. Azadani, *et al*. "Anisotropy in Layered Half-metallic Heusler Alloy Superlattices". J. Appl. Phys. (2016)

PATENTS

- "Layered Heusler alloys and methods for the fabrication and use thereof."
  W. H. Butler, K. Munira, Javad G. Azadani. US patent, 2017.

HONORS & AWARDS

- 12 Publications with 290 Citations.
- National Interest Waiver Recipient (Green Card), 2020.
- Bernard D. Paul Graduate Fellowship, University of Minnesota, 2015.

TEACHING EXPERIENCE

- **Teaching Assistant** University of Minnesota, MN Sept. 2016- Dec. 2020

Courses: Semiconductor Properties, Semiconductor Devices, Energy Conversion and Storage, Fundamentals of Electrical Engineering, Fundamental of EE Lab, Analog Electronics.

- **Teaching Assistant** University of Alabama, AL May 2014-Aug. 2014

Courses: General Physics (Mechanics) Lab (PHY101), General Physics (Electricity) Lab (PHY105).

- Conducted office hours to help students understand and solve homework problems.
- Graded homework, quizzes and exams, keep record of the scores.
- Collaborated with professors and other TA's on solutions and grading, improving communication skills.