Curriculum Vitae

Adeleh Vatankhahan

Personal Information

Name: *Adeleh* **Last Name:** *Vatankhahan* **Nationality:** *Iranian*
Institute: *Department of physics, Velayat University, Iranshahr, Iran.*
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Current Position

— **Associate Professor**
Department of physics, *Velayat University, Iranshahr, Iran* (2023 - now).

Postdoc Positions

— **Postdoctoral Associate**
Department of Physics**,** Shahrood University of Technology, Shahrood,Iran (2020 – 2023)
Supervisor: Dr. Tayebeh, Movlarooy

Education

— **Ph.D**
Department of Physics**,** Shahrood University of Technology, Shahrood,Iran (2016 – 2020)
Ph.D in Theoretical Condensed Matter Physics.
Supervisor: Dr. Tayebeh, Movlarooy

— **Master of Science**
Department of Physics , Khayyam University, Mashhad,Iran (2009 - 2011).
M.Sc. in Condensed Matter Physics.
Supervisor: Dr. Hadi Arabshahi

— **Bachelor of Science**
Physics Department, Faculty Ferdowsi University**,**Mashhad,Iran (2005-2009).

Research Interests

- **Spintronics (Spin dynamics and transport insemiconductors)**
- **Strongly Correlated systems (Superconductivity)**
- **Modeling Nano Structures (Computational NanoMaterial)**
- **Condensed Matter Physics (Multiferroic Material, TopologicalInsulator)**
- **Quantum Monte Carlo simulations**

Honors and Awards

— **Active Researcher, University of Velayat, Iran (2025)**

— **Outstanding Faculty in Teaching, University of Velayat, Iran (2025)**

— **Fellowship** for talented students during PhD, Shahrood University of Technology, Shahrood,Iran (2017).

Publications

1. **Vatankhahan, A**., Movlarooy, T . Najafi-Ashtiani .H (2026). Metal-to-Semiconductor Transition in Edge-Passivated C3N Nanoribbons: A First-Principles Study. **International Journal of Modern Physics B**
2. Najafi-Ashtiani .H, **Vatankhahan, A**. (2026). Enhanced electrochromic performance of silver-doped vanadium pentoxide films with porous morphology fabricated by oblique angle deposition. **Next Materials.** 102039
3. Najafi-Ashtiani .H, **Vatankhahan, A**. (2025). Silver-doped Vanadium oxide electrochromic device by high-power impulse magnetron sputtering. **Materials Today Communications**, 114260
4. **Vatankhahan, A**., Movlarooy, T . Najafi-Ashtiani .H (2025) .Prostate cancer biomarkers detection using C_6N_6 nanostructures: a DFT study. **Surfaces and Interfaces**, 72, 107155
5. **Vatankhahan, A**., Movlarooy, T . (2025). Semiconductor-half metal transition in C6N6 nanoribbons by edge passivation with F and O atoms. **Indian Journal of Physics**, 1-10.
6. **Vatankhahan, A**., Movlarooy, T. (2025). Ab Initio Study of the Magnetic and Electronic Properties of C6N6 Nanoribbons. **International Journal of Quantum Chemistry**, 125(8), e70027.
7. Bazrafshan, M., **Vatankhahan, A**., Khoeini, F., & Farzadian, O. (2025). Quantum mechanical insights into Edge-Dependent electronic properties of phosphorene nanoribbons. **Results in Physics**, 108140.
8. Movlarooy, T., **Vatankhahan, A**. (2023). Ferromagnetic half-metal with high Curie temperature in Cr P nanoribbons: good material for spintronic applications. **Physical Chemistry Chemical Physics**,*25*(35), 24155-24162.
9. **Vatankhahan, A.** Movlarooy, T. (2023). DFT Study of High-Curie-Temperature Ferromagnetism in α-borophene Nanoribbons for Spintronic Applications. **Advanced Theory and Simulations**, 2200925.
10. Hosseini, R., Movlarooy, T., **Vatankhahan, A**. (2023). Tuning structural and electronic properties of single wall AlN nanotubes. **Modern Physics Letters B,** *37*(32), 2350098.
11. Vatankhahan, A., Movlarooy, T. (2022). Modulating spintronic properties of Nitrogen passivated borophene nanoribbons. **Materials Science and Engineering: B**, 281, 115744.
12. Hosseini, R., Movlarooy, T., **Vatankhahan, A**. (2022). Electronic structures and stability of double-walled armchair and zigzag AlN nanotubes. **Materials Science and Engineering: B**, *286*, 115973.
13. **Vatankhahan, A**., Movlarooy, T. (2021). The effect of edges hydrogenation and adsorption of Co and Mn atoms on spin transport properties of borophene Nanoribbons. **Materials Science and Engineering: B**, 273, 115391.
14. **Vatankhahan, A**., Movlarooy, T. (2020). Ab-initio study of transition metals adsorption on borophene nanosheet. **IEEE Magnetics Letters**
15. Tochaei, A. A., Arabshahi, H., Benam, M. R., **Vatankhahan, A**., Abedininia, M. (2016). Comparison between Si/SiO 2 and InP/Al 2 O 3 based MOSFETs. **Journal of Experimental and Theoretical Physics**, 123(5), 869-874.
16. Arabshahi, H., **Vatankhahan, A**., Tayarani, M. H. (2011). Comparison of low field electron transport properties in InN and GaN semiconductors by solving Boltzmann equation using iteration model**. International Journal of Science and Advanced Technology**,
17. **Vatankhahan, A**., Khoshlahni, R. (2011). Calculated of Electron Mobility in InN by Monte Carlo and Iteration Models. **International Journal of Science and Advanced Technology**, *1*.

18. Arabshahi, H., Benam, M. R., **Vatan-Khahan, A.**, Abedininia, M. (2016). Comparison between Si/SiO {sub 2} and InP/Al {sub 2} O {sub 3} based MOSFETs. **Journal of Experimental and Theoretical Physics,** 123(5).
19. **Vatankhahan, A**., Movlarooy, T, Garcia-Lecce. A" Tuning the electronic and magnetic properties of ß12-borophene ". **The 20th edition of Trends in Nanotechnology International Conference (TNT2019)**
20. .M.Abedininiya, H. Arabshahi, MH. Tayarani, **Vatankhahan, A**," Simulationof Electron Transport in GaAs,MOSFET Transistor at The Nanoscale in High Electric Field Using Ensemble Monte Carlo Simulation " , **11Th condensed matter physics conference of iran(2013)**
21. **Vatankhahan**, H. Arabshahi," Comparison of Electron Transport Properties IInSemiconductors AlN and ZnO in Iow of Field Electron and Smaller Size of Micrometers"; **11Th condensed matter physics conference of iran(2013)**
22. **Vatankhahan**, H. Arabshahi ," Electron Transport Properties in InGaNSemiconductor By Using Iteration and Monte Carlo Simulation Models in Iow Field Electron and Smaller Size of Micrometers"; **11Th condensed matter physics conference of Iran(2013).**

Professional Careers

Visiting Researcher:
Donostia International Physics Center (May. 2019 -Oct. 2019)
In Prof. Aran Garcia-Lecce.'s Research Group.

Skills

Computer:

Familiar with windows and Linux OperatingSystem.
Experience with C++, FORTRAN Programming,
Familiar with DFT and NEGF simulation packages.
(SIESTA, TRANSIESTA, SMEAGOL, ATK(AtomistixTool Kit))
Familiar with some computational approach like as DFT, NEGF.
Familiar with Microsoft Office Word, Power Point and Diagram Plotting