

# IN HIS NAME

## PERSONAL INFORMATION

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**First Name:** Shoeib  
**Last Name:** Babaei Touski  
**Date of Birth:** May 10, 1986  
**Sex:** Male  
**Nationality:** Iranian

## EDUCATION

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**Bachelor of Science**, Electrical Engineering, *2009*  
University of Isfahan , Isfahan, Iran  
Final Project Title: Interconnect using Carbon Nanotube and comparison with copper  
Supervisor: Dr. Mehdi niroomand

**Master of Science**, Electrical Engineering, *2011*  
Sharif University of Technology , Tehran, Iran  
Final Project Title: Design and Analysis of Transistor Based Based on Graphane  
Supervisor: Dr. Sina Khorasani

**Doctor of Philosophy**, Electrical Engineering, *2016*  
University of Tehran , Tehran, Iran  
Final Project Title: Investigation of the Effects of Surface Roughness on Graphene Nanoribbon for  
Using as Field Effect Transistor  
Supervisor: Dr. Mahdi Pourfath

## PUBLICATIONS

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- [1]. Gharekhanlou, B., S. B. Tousaki, and S. Khorasani. "Bipolar transistor based on graphane." In Journal of Physics: Conference Series, vol. 248, no. 1, p. 012061. IOP Publishing, 2010.
- [2]. Touski, Shoeib Babaei, and Mahdi Pourfath. "Substrate surface corrugation effects on the electronic transport in graphene nanoribbons." Applied Physics Letters 103.14 (2013): 143506.
- [3]. Kahnoj, Sina Soleimani, Shoeib Babaei Touski, and Mahdi Pourfath. "The effect of electron-electron interaction induced dephasing on electronic transport in graphene nanoribbons." Applied Physics Letters 105, no. 10 (2014): 103502.
- [4]. Chaghazardi, Zahra, Shoeib Babaei Touski, Mahdi Pourfath, and Rahim Faez. "Spin relaxation in graphene nanoribbons in the presence of substrate surface roughness." Journal of Applied Physics 120, no. 5 (2016): 053904.
- [5]. Touski, Shoeib Babaei, Rafael Roldán, Mahdi Pourfath, and M. Pilar López-Sancho. "Enhanced spin-flip scattering by surface roughness in WS<sub>2</sub> and MoS<sub>2</sub> armchair nanoribbons." Physical Review B 95, no. 16 (2017): 165301.
- [6]. Chaghazardi, Zahra, Rahim Faez, Shoeib Babaei Touski, and Mahdi Pourfath. "Spin FET Based on Graphene Nanoribbon in the Presence of Surface Roughness." IEEE Transactions on Electron Devices 64, no. 8 (2017): 3437-3442.
- [7]. Ariapour, Mohammad, and Shoeib Babaei Touski. "Spin splitting and rashba effect at mono-layer gate in the presence of strain." Materials Research Express 6, no. 7 (2019): 076402.
- [8]. Babaei Touski, Shoeib. "Spin transport in armchair silicene nanoribbon on the substrate: The role of charged impurity." physica status solidi (b) 256, no. 11 (2019): 1900082.

- [9]. Touski, Shoeib Babae, and Manouchehr Hosseini. "A comparative study of substrates disorder on mobility in the Graphene nanoribbon: Charged impurity, surface optical phonon, surface roughness." *Physica E: Low-dimensional Systems and Nanostructures* 116 (2020): 113763.
- [10]. Touski, Shoeib Babae, Mohammad Ariapour, and Manouchehr Hosseini. "Electrical and electronic properties of strained mono-layer InTe." *Physica E: Low-dimensional Systems and Nanostructures* 118 (2020): 113875.
- [11]. Hosseini, Manouchehr, and Shoeib Babae Touski. "Investigation of double-gate ferroelectric FET based on single-layer MoS2 with consideration of contact resistance." *Journal of Electronic Materials* 49, no. 7 (2020): 4085-4090.
- [12]. Ariapour, Mohammad, and Shoeib Babae Touski. "Strain engineering of spin and Rashba splitting in Group-III monochalcogenide MX (M= Ga, In and X= S, Se, Te) monolayer." *Journal of Magnetism and Magnetic Materials* 510 (2020): 166922.
- [13]. Kokabi, Alireza, and Shoeib Babae Touski. "Electronic and photocatalytic properties of Antimonene nanosheets." *Physica E: Low-dimensional Systems and Nanostructures* 124 (2020): 114336.
- [14]. Ghobadi, Nayereh, and Shoeib Babae Touski. "The electrical and spin properties of monolayer and bilayer Janus HfSSe under vertical electrical field." *Journal of Physics: Condensed Matter* 33, no. 8 (2020): 085502.
- [15]. Touski, Shoeib Babae, and Nayereh Ghobadi. "Interplay between stacking order and in-plane strain on the electrical properties of bilayer antimonene." *Physica E: Low-dimensional Systems and Nanostructures* 126 (2021): 114407.
- [16]. Touski, Shoeib Babae, and M. Pilar López-Sancho. "Effects of vertical electric field and charged impurities on the spin-polarized transport of  $\beta$ -antimonene armchair nanoribbons." *Physical Review B* 103, no. 11 (2021): 115433.
- [17]. Touski, Shoeib Babae, and Nayereh Ghobadi. "Structural, electrical, and Rashba properties of monolayer Janus Si 2 X Y (X, Y= P, As, Sb, and Bi)." *Physical Review B* 103, no. 16 (2021): 165404.
- [18]. Ghobadi, Nayereh, and Shoeib Babae Touski. "Structural, electrical and optical properties of bilayer SiX (X= N, P, As and Sb)." *Journal of Physics: Condensed Matter* 33, no. 28 (2021): 285502.
- [19]. Touski, Shoeib Babae. "Strain induced modification in electronic properties of monolayer InSb." *Superlattices and Microstructures* 156 (2021): 106979.
- [20]. Touski, Shoeib Babae, and Nayereh Ghobadi. "Vertical strain-induced modification of the electrical and spin properties of monolayer MoSi2 X 4 (X= N, P, As and Sb)." *Journal of Physics D: Applied Physics* 54, no. 48 (2021): 485302.
- [21]. Kokabi, Alireza, and Shoeib Babae Touski. "Structural and electronic properties of semi-buckled phase of III4-V4 monolayers." *Physica E: Low-dimensional Systems and Nanostructures* 134 (2021): 114922.
- [22]. Kokabi, Alireza, Shoeib Babae Touski, and Amir Mamdouh. "Negative differential resistance, rectification, tunable peak-current position and switching effects in an alanine-based molecular device." *Journal of medical engineering & technology* 45, no. 7 (2021): 505-510.
- [23]. Ghobadi, Nayereh, Manouchehr Hosseini, and Shoeib Babae Touski. "Field-Effect Transistor Based on MoSi2N4 and WSi2N4 Monolayers Under Biaxial Strain: A Computational Study of the Electronic Properties." *IEEE Transactions on Electron Devices* (2022).
- [24]. Hasani, Nona, Ashkan Rajabi-Maram, and Shoeib Babae Touski. "Effects of spin-orbit coupling on the electronic properties of the buckled III-V monolayers." *Journal of Magnetism and Magnetic Materials* 543 (2022): 168638.
- [25]. Rajabi-Maram, Ashkan, Nona Hasani, and Shoeib Babae Touski. "Tuning electronic properties of MSb (M= C, Si, Ge and Sn) monolayers by strain engineering." *Physica E: Low-dimensional Systems and Nanostructures* 138 (2022): 115065.

- [26]. Kokabi, Alireza, and Shoeib Babae Touski. "Hydrogen storage performance enhancement and bandgap opening of M-Decorated (M= Li, Na and K) III4–V4 monolayer by fluorine functionalization." *International Journal of Hydrogen Energy* 47, no. 38 (2022): 16978-16984.
- [27]. Kokabi, Alireza, Mohammadreza Bahramy, and Shoeib Babae Touski. "Deep transfer learning correlation study of electronic and spin properties in buckled III–V monolayers." *Physica E: Low-dimensional Systems and Nanostructures* 140 (2022): 115130.
- [28]. Niknezhad, H.N. and Touski, S.B., 2022. Tunneling fet based on monolayer antimonene: The role of vacancy. *IEEE Transactions on Electron Devices*, 69(10), pp.5934-5939.
- [29]. Hosseini, M., Akbarikho, A. and Touski, S.B., 2022. Effects of S-vacancy on electrical performance of monolayer TMD nanoribbons field-effect transistor. *Materials Science in Semiconductor Processing*, 152, p.107080.
- [30]. Kokabi, A., Bahramy, M. and Touski, S.B., 2023. Transfer learning prediction of spin–orbit correction from bond polarizability for electronic properties of group-III monochalcogenides monolayers. *Physica E: Low-dimensional Systems and Nanostructures*, 146, p.115449.
- [31]. Hasani, N., Rajabi-Maram, A. and Touski, S.B., 2023. Strain engineering of electronic and spin properties in SnX (X= P, As, Sb, Bi) monolayers. *Journal of Physics and Chemistry of Solids*, 174, p.111131.
- [32]. Rajabi-Maram, A., Hasani, N. and Touski, S.B., 2023. Structural and electronic properties of hexagonal MXH (M= C, Si, Ge and Sn; X= N, P, As and Sb) monolayers: A first-principles prediction. *Physica E: Low-dimensional Systems and Nanostructures*, 151, p.115710.
- [33]. Hasani, N., Shalchian, M., Rajabi-Maram, A. and Touski, S.B., 2023. Electrical Properties of Double-Gate Field-Effect Transistor Based on MA<sub>2</sub>N<sub>4</sub>(M = Ti, Zr, and Hf; A = Si, Ge, and Sn) Monolayers. *IEEE Transactions on Electron Devices*.
- [34]. Adib, H., Mazaherifar, M., Touski, S.B. and Mohajerzadeh, S., 2023. Piezoelectric Field Effect and Field-Effect Transistors Based on MoSi<sub>2</sub>N<sub>4</sub>, MoSi<sub>2</sub>P<sub>4</sub>, and MoGe<sub>2</sub>N<sub>4</sub> Monolayers. *IEEE Transactions on Electron Devices*, 70(11), pp.6042-6048.
- [35]. Touski, S.B., Hosseini, M. and Kokabi, A., 2023. Anti-reflective MX (M= Sc and Y; X= N, P, As, Sb and Bi) monolayers: structural, electronic and optical study. *Semiconductor Science and Technology*, 39(1), p.015002.
- [36]. Kokabi, A., Bahramy, M. and Touski, S.B., 2024. Spin and electronic property prediction of IV–V binary monolayers using deep knowledge transfer method. *Journal of Magnetism and Magnetic Materials*, 590, p.171602.
- [37]. Kokabi, Alireza, Shoeib Babae Touski, and Rasul Mardanian. "Electronic and NLO Investigation of Bismuthene Nanosheet as a Promising Photocatalyst." (2024).
- [38]. Alavi-Rad, H. and Touski, S.B., 2024. Electronic and optical properties of alkaline earth halides MX<sub>2</sub> (M= group-II; X= group-VII) from monolayers to bulk: Anti-reflecting applications. *Physica B: Condensed Matter*, 676, p.415650.

## CONFERENCES

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- [1]. Touski, S. B., Mahdi Pourfath, and Hans Kosina. Electronic Transport in Graphene Nanoribbons in the Presence of Substrate Surface Corrugation. *International Workshop on Computational Electronics (IWCE)*, 2013.
- [2]. Mazaherifar, Mohsen, Shoeib Babae Touski, Mahdi Pourfath, Mahdi Moradinasab, and Hans Kosina. "Effects of Correlated Edge Roughness on the Electronic Properties of Armchair Graphene Nanoribbons", *isdrs* (2013).
- [3]. Touski, S. B., Z. Chaghazardi, M. Pourfath, M. Moradinasab, R. Faez, and H. Kosina. "Spin Transport in Graphene Nanoribbons: The Role of Surface-Corrugation." *International Workshop on Computational Electronics (IWCE)*, 2014.

- [4]. Touski, S. B. "Geometrical Averaging versus Arithmetical Averaging in Tunneling Field Effect Transistor Based on Armchair Graphene Nanoribbon with Surface Roughness Disorders", 5th International conference on Applied Research in Electrical, Mechanical and Mechatronics Engineering, 2019.
- [5]. S. B. Touski and M. Ariapour, "Biaxial Strain Modulates Spin Properties of Monolayer GaTe", 5th International conference on Applied Research in Electrical, Mechanical and Mechatronics Engineering, 2019.
- [6]. S. B. Touski and Elham Shamsian,"The Effects of Scaling on the Sub-threshold Swing of Ferroelectric Field Effect Transistor", 5th International conference on Applied Research in Electrical, Mechanical and Mechatronics Engineering, 2019.
- [7]. S. B. Touski,"The Effects of Charged Impurity on the Electrical Properties of Buckled Silicene", 2nd International Conference on Modern Technologies in Sciences, 2019.
- [8]. Shoeib Babae Touski and Manouchehr Hosseini,"Competition of Contact Resistance and Ferroelectric Gate Oxide on the Performance of Double-Gate MoS2 Monolayer FET", 2nd International Conference on Modern Technologies in Sciences, 2019.
- [9]. S. B. Touski and Hamed Habibi,"The Performance enhancement of Tunneling FET with Germanium in the Source", 2nd International Conference on Modern Technologies in Sciences, 2019.
- [10]. S. B. Touski, "The effect of Spin-orbit Coupling on the Electrical Properties of Monolayer Buckled InSb", 2 nd Intl. Conference on Nanotechnology & Nanoscience, 2021.

## RESEARCH INTERESTS

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Two-dimensional Materials, Quantum Transport, Spintronics, Magnetism.

## TEACHING

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Three Semesters at the Islamic Azad University, South Tehran Branch, Tehran, Iran.

Six years at Hamedan university of Technology, Hamedan, Iran.

## COMPUTER SKILLS

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*Languages & Software:* C, C++, Fortran, MATLAB, PSpice, Mathematica, Microsoft Office Pack, SIESTA, SGFramework.

*Operating Systems:* Linux, Windows.

## LANGUAGE

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Persian, English, Spanish