Curriculum Vita

Dr. Marjan Rajabi

Research fields:

Semiconductor Materials and Devices:

- Physical properties of semiconductors; bulk, thin films and nanostructures (Structural, optical, electrical, optoelectronic and electromechanical properties).
- Semiconductor devices; photodetectors, solar cells, nanogenerators, sensors and varistors

Work Experience:

Associate Professor, Department of Advanced Materials and Renewable Enrgy, IROST	April 2023- present
Director of Central laboratory, Iranian Research Organization for Sccience and Technology, IROST	June 2021- December 2023
Deputy direcror of Department of Advanced Materials and Renewable Enrgy, IROST	September 2017- June 2021
Assistant Professor, Department of Advanced Materials and Renewable Enrgy, Iranian Research Organization for Sccience and Technology (IROST)	September 2012- April 2023

Educational backgrounds:

Ph.D. January 2007- December 2011

Physics department, Alzahra University, Tehran, Iran

Thesis title: Fabrication of ZnO nanostructures for application in ultraviolet photodetectors.

M.S. September 2003- July 2006

Physics department, Alzahra University, Tehran, Iran

Thesis title: Study and fabrication of porous silicon solar cells

B.S. September 1998- July 2002

Physics department, Islamic Azad university central Tehran branch, Tehran, Iran

Publications:

ISI & ISC Journals:

[28] **M. Rajabi**, F. Abrinaei, F. Tavoosi "Structural and optical investigation of $BaTiO_3$ nanostructures produced by two-step hydrothermal method" submitted.

[27] A. Amini, **M. Rajabi**, S. M. Zahraee "The Annealing Effect on the Performance of Flash Sintered ZnO-Bi_2O_3-Sb_2O_3 Based Varistors"submitted.

[26] A. Amini, **M. Rajabi**, S. M. Zahraee "Microstructure and electrical properties of flash sintered ZnO-Bi_2O_3-Sb_2O_3 varistors: Effect of current density with a controlled current ramp" Materials Chemistry and Physics 295 (2023) 127094.

[25] A. Amini, **M. Rajabi**, S. M. Zahraee, F. Nourozian "The effect of composition on flash sintering parameters of varistors based on ZBS" Journal of Iranian Ceramic Society 17 (4) (2022) 45-53.

[24] N. S. Faal Nazari, **M. Rajabi**, and A. Z. Moshfegh, "The UV photodetection enhancement of tailored ZnO nanorods by controlling the aspect ratio" Surfaces and Interfaces 2 (2022) 101682.

[23] E. Mohagheghpour, R. Gholamipour, **M. Rajabi**, M Larijani, "Study of structural evolution of amorphous carbon films on Ni-Cu alloy and its correlation with deposition temperature and ion beam energy" Quarterly Journal of Advanced Materials in Engineering 40 (3) (2021) 29-42.

[22] E. Mohagheghpour, **M. Rajabi**, R. Gholamipour, S. Hosseinabadi "Optical properties and Surface growth mechanism of amorphous carbon nanolayers" Int. J. Nano Dimens. 12 (2021) 402-410.

[21] **M. Rajabi**, M. Ghorbani and A. Ali, A. S. Bhatti, "Ag-doped ZnO nanorods for multifunctional applications: UV and ethanol gas sensing" Journal of Materials Science: Materials in Electronics 32 (2021) 18108–18122.

[20] E Mohagheghpour, M Larijani, **M Rajabi**, R Gholamipour, "Effect of Silver Clusters Deposition on Wettability and Optical Properties of Diamond-like Carbon Films" International Journal of Engineering 34 (3) (2021) 706-713.

[19] E. Mohagheghpour, S. Sheibani, **M. Rajabi**, R. Gholamipour,and M. M. Larijani "Evaluation of Optical and Structural Properties of Graphitic Amorphous Carbon Thin Film Deposited by Ion Beam Sputtering Deposition Technique at Different Ion Beam Energy" Journal of surface science and engineering, 16 (44) (2020) 27- 37.

[18] S. RamezaniSani, **M. Rajabi**, and F. Mohseni, "Influence of nitrogen doping on visible light photocatalytic activity of TiO_2 nanowires with anatase-rutile junction", *Chemical Physics Letters*, 744 (2020) 137217.

[17] **M. Rajabi** and S. Simorgh, "Band gap energy determination of TiO2 nanorod array by Kubelka-Munk method and investigation of the UV photodetection of Au/TiO2/Au" Iranian Journal of Physics Research 19 (3) (2020) 645-654.

[16] **M. Rajabi** and F. Abrinaei, "High nonlinear optical response of Lanthanum-doped titania nanorod arrays under pulsed laser irradiation at 532 nm" Optics and Laser Technology, 109 (2019) 131-138.

[15] E. Mohagheghpour, R. Gholamipour, **M. Rajabi**, S. Sheibani, and M. M. Larijani "Effect of thermal treatment on structure and Curie temperature of Ni-Cu (70.4-29.6;W/W) ferromagnetic alloy" METALLURGICAL ENGINEERING, 21 (2) (2018) 89-94.

[14] E. Mohagheghpour, **M. Rajabi**, R. Gholamipour, M. M. Larijani, and S. Sheibani, "Effect of substrate temperature on structural and physical properties of carbon thin films prepared by ion beam sputtering deposition method" Journal of Advanced Processes in Materials Engineering 11 (4) (2018) 1-10.

[13] **M. Rajabi** and M. Ghorbani, "Performance evaluation of nanogenerators based on Ag-doped ZnO nanorods" Sensors and Actuators A: Physical, 266 (2017) 338-344.

[12] E. Mohagheghpour, **M. Rajabi**, R. Gholamipour, M. M. Larijani, and S. Sheibani, "Ion beam energy dependence of surface and structural properties of amorphous carbon films deposited by IBSD method on Ni-Cu alloy" *Journal of Materials Research*, 32 (2017) 1258-1266.

[11] S. Hosseinabadi and **M. Rajabi,** "Roughness kinetic and multiaffinity of anisotropic etched silicon" Superlattices and Microstructures, 102 (2017) 180-188.

[10] N. Rahmani, R. S. Dariani, and **M. Rajabi**, "A proposed mechanism for investigating the effect of porous silicon buffer layer on TiO_2 nanorods growth**"** *Applied surface Science* 366 (2016) 359-364.

[9] E. Mohagheghpour, **M. Rajabi**, R. Gholamipour, M. M. Larijani, and S. Sheibani, "Correlation study of structural, optical and electrical properties of amorphous carbon thin films prepared by ion beam sputtering deposition technique**"** *Applied surface Science*, 360 (2016) 52-58.

[8] **M. Rajabi**, S. Shogh, and A. Iraji zad, "Defect study of TiO2 nanorods grown by hydrothermal method through photoluminescence spectroscopy**"**, *Journal of Luminescence*, 157 (2015) 235-242.

[7] **M. Rajabi**, R. S. Dariani, A. Iraji zad, and F. Zahedi, "Optoelectronic properties of cauliflower ZnO-ZnO nanorod/p-Si heterostructure**"**, *Solid State Electronics.*, **80** (2013) 33-37.

[6] **M. Rajabi**, R. S. Dariani, and A. Iraji zad, "Studying the effect of growth conditions on ZnO nanowire array synthesized on Si (100) without catalyst**"**, *Materials Science in Semiconductor Processing*, **16** (2013) 171-178.

[5] R. S. Dariani,S. Minaeifard, **M. Rajabi**, "Simulating and modeling of three dimensional columnar growth nanoscale structure**"** *Journal of Optoelectronic and Advanced Materials*, **14** (2012) 890-898.

[4] **M. Rajabi**, R. S. Dariani, and A. Iraji zad, "UV photodetection of laterally connected ZnO rods grown on porous silicon substrate**",** *Sensors and Actuators A: Physical*, **180** (2012) 11-14.

[3] **M. Rajabi**, R. S. Dariani, and A. Iraji zad, "Growth of ZnO nanostructures on porous silicon and oxidized porous silicon substrates", *Brazilian Journal of Physics* 41 (2) (2011) 113-117.

[2] **M. Rajabi**, R. S. Dariani, and A. Iraji zad, "Comparative study of ZnO nanostructures grown on silicon (100) and oxidized porous silicon substrates with and without Au catalyst by chemical vapor transport and condensation", *Journal of Alloys and compounds* 509 (2011) 4295-4299.

[1] **M. Rajabi** and R. S. Dariani, "Current improvement of porous silicon photovoltaic devices by using double layer porous silicon structure: applicable in porous silicon solar cells", *J. Porous Mater.*, 16 (2009) 513-519.

National and International Conference papers:

[12] H. Shekaryar, T. E. Sadrabadi, D. S. Fateh, **M. Rajabi**, "Surface characterization of rubbed polyvinyl alcohol thin films" proceeding of the The 11th International Conference on Materials and Metallurgical Engineering, 13-14 December 2022.

[11] A. Amini, **M. Rajabi**, S. M. Zahraee, "Comparison of electrical properties of ZnO-Bi_2O_3-Sb_2O_3 varistor ceramics prepared by traditional and flash sintering methods" proceeding of the The 11th International Conference on Materials and Metallurgical Engineering, 13-14 December 2022.

[10] N. S. Faal Nazari, **M. Rajabi**, "Investigating ultraviolet photodetection of the core-shell structure of zinc oxide-barium titanate nanorods" proceeding of the The 11th International Conference on Materials and Metallurgical Engineering, 13-14 December 2022.

[9] **M. Rahabi**, F. Tavoosi, "Piezoelectric Nanogenator Based on Preferentially Oriented Barium Titanate Layer" Proceeding of the Iran physics conference 2021, Zahedan, Iran.

[8] Z. Hosseini, Z. Khodabandelu, A. Mortezaali, **M. Rajabi**, "Investigating the effect of Cu impurity on the photodetection performance of a ZnO nanorods film" Proceeding of the Iran physics conference 2021, Zahedan, Iran.

[7] **M. Rajabi**, "The effect of La doping on structural properties and wettability of titanium dioxide nanorods" proceeding of the The 13th Conference on Condensed Matter of Iranian Physics Association 2017,Tehran, Iran.

[6] **M. Rajabi**, M. Ghorbani, "Investigating the effect of the substrate on the structural and photoluminesce properties of zinc oxide nanorods" proceeding of the The 13th Conference on Condensed Matter of Iranian Physics Association 2017,Tehran, Iran.

[5] **M. Rajabi**, "One dimensional ZnO nanorods for energy applications" proceeding of the The 1st UKM-ISESCO-COMSATS International Workshop on Nanotechnology for Young Scientists (IWYS2016) 28 – 30 November 2016, Putrajaya, Malaysia. (Oral presentation)

[4] E. Mohagheghpour, **M. Rajabi**, R. Gholamipour, M. M. Larijani, S. Sheibani, and M. Malek, "opto- electrical properties of amorphous carbon thin films prepared by ion beam sputtering deposition method" proceeding of the 5th International Biennial Conference on Ultrafine Grained and Nanostructured Materials (UFGNSM 2015), Tehran, Iran.

[3] **M. Rajabi,**"Luminescence spectroscopy of La doped TiO_2 one- dimensional nanostructures", proceeding of International symposium on "Light and Life", 14- 15 October 2015, Islamabad, Pakistan.(Oral presentation)

[2] **M. Rajabi**, "Photoluminescence Study of TiO_2 Nanorods Grown by Hydrothermal Method", proceeding of the 5th International Conference on Nanostructures (ICNS5 2014), 6- 9 March 2014, Kish island, Iran.

[1] S. Hosseinabadi and **M. Rajabi**, "Stochastic and fractal properties of silicon and porous silicon rough surfaces", proceeding of the Conference on Computational Physics (CCP 2012), Japan. (Oral presentation)

And other 10 papers in national conference proceedings.

Research Projects:

[6] Fabrication of liquid crystal based antenna

[5] Piezoelectric nanogenerator: Synthesis and characterization of barium titanate nanorods and device fabrication.

[4] Manufacturing a multifunctional sensor based on doped zinc oxide nanorod array for UV light and gas sensing (International project).

[3] Investigation of UV photodetection of ZnO and TiO2 nanorods.

[2] Synthesis and characterization of ZnO one dimensional nanostructures by hydrothermal method for fabrication of piezoelectric nanogenerator.

[1] Growth of one-dimensional TiO_2 nano structures on FTO substrate for applying in optoelectronic.

Teaching Experiences:

- Solids State Physics (for the graduate students of material science and engineering)
- Physics of semiconductor devices (for the undergraduate students of physics)
- Physics Lab (Basic Physics)

Skills:

- Synthesis Techniques:
    - Growth of semiconductor nanostructures by CVTC and hydrothermal synthesis methods.
    - Deposition of thin films by PVD system, dip coating and spin coating methods.
    - Formation of porous and pyramid like silicon structures by electrochemical and wet chemical etching.
- Characterization Techniques:
    - UV/Visible spectroscopy.
    - Photoluminescence spectroscopy.
    - XRD
    - AFM
    - SEM
    - Current- voltage measurements.
    - Characterization of Photodetectors, solar cells and nanogenerators.

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