Curriculum Vitae

Saba Ranjbar

Personal Information

Nationality: Iranian
Date of Birth: 19 Sep. 1990
Marital Status: Married
Current status: Assistant Professor
Manager of Energy &Environmental Biotechnology Department

Contact Information

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Positions

2024- Present **Assistant professor**, Institute of Industrial and Environmental Biotechnology, National Institute of Genetic Engineering and Biotechnology (NIGEB), Tehran, Iran

2020-2022 **Postdoctoral fellow**, Department of Physics, Sharif University of Technology, Tehran-Iran
Project subject: "Design and Application of Nanomaterials in Electrochemical and Electrochromic Biosensors"
Supervisor: Prof. Mohammad Reza Ejtehadi and Dr. Naimeh Naseri

2020-2021 **Research & development scientist,** The Research Institute of Petroleum Industry (RIPI), Tehran-Iran
Project subject: "Development of Smart Tracers based on Carbon Quantum Dots for Enhanced Oil Recovery (EOR) Applications"
Supervisor: Dr. Nahid Sarlak, Dr. Alimorad Rashidi

Education

2015-2019 **Ph.D., Analytical Chemistry**, Department of Chemistry, Sharif University of Technology, Tehran-Iran

Thesis subject: "Design, construction, and application of nanostructured electrochemical biosensor based on aptamers for diagnosis some of the pathogenic bacteria" GPA: 18.34/20

Supervisor: Prof. Saeed Shahrokhian

2018-2019 **Sabbatical leave, Nanobiotechnology**, Catalan Institute of Nanoscience and Nanotechnology (ICN2), Barcelona- Spain

Iranian Ministry of Science, Research and Technology (MSRT) fellowship,

Projects subjects: Development of point-of-care sensor for visual detection of pathogens and biomarkers

Supervisor: Prof. Arben Merkoci. Nanobioelectronic and Biosensor group

2013-2015 **M.Sc., Analytical Chemistry**, Department of Chemistry, Sharif University of Technology, Tehran-Iran

Thesis subject: "Preparation and investigation of the electrochemical behavior of sensors based on glassy carbon electrode modified with various carbon nanostructures decorated by some of metal nanoparticles for determination of Ceftizoxime" GPA: 17.20/20

Supervisor: Prof. Saeed Shahrokhian

2009-2013 **B.Sc., Pure Chemistry,** Department of Chemistry, Kharazmi University of Tehran, Tehran-Iran. GPA: 17.87/20

Professional Experience

- Nanostructured materials synthesis, modification and characterization
- Electrochemical, optical, and electrochromic (bio)sensors
- Point of cares (PoCs) biosensors & rapid test

- Sensor array assisted machine learning algorithms
- Smart labels based on nanomaterials for food packaging
- Genetically modified organism as neutral sensors

Publications

- Ranjbar, S., Salavati, A. H., Ashari Astani, N., Naseri, N., Davar, N., & Ejtehadi, M. R. Electrochromic Sensor Augmented with Machine Learning for Enzyme-Free Analysis of Antioxidants. *ACS Sensors*, **2023**, 8(11), 4281-4292.

- Vojgani, Y., Ranjbar, S., Naseri, N., Dolati, A., Madjd, Z., Kiani, J., Saeedi, S. and Karimi, M., Quantitative measurement of CA 15-3 cancer biomarker using an electrochemical aptasensor based on the electrodeposition of Au thin film on cauliflower-like rGO-MoS_2 nanocomposite. *Microchim. Acta*, **2023**, 190(10), 406.

- Ranjbar, S., Sarlak, N., and Rashidi, A. "Fluorescent-tagged water with carbon dots derived from phenylenediamine as an equipment-free nanotracer for enhanced oil recovery. *J. Colloid Interface Sci*. **2022,** 628, 43-53.

- Ranjbar, S., Sarlak, N., Rashidi, A. Development of a Green and Sustainable Nanofluid Based on Carbon Dots with Sensing Capability for Enhanced Oil Recovery. *Energy & Fuels*, **2022**, 36(19), 12126-12134.

- Ranjbar, S., Astani, N. A., Atabay, M., Naseri, N., Esfandiar, A., & Ejtehadi, M. R. Electrochemical and Computational Studies of Bio-mimicked $Ti_3C_2T_x$ MXene-based Sensor with Multivalent Interface. *J. Colloid Interface Sci*. **2022,** 623, 1063-1074.

- Sena-Torralba, A., Torné, H., Parolo, C., Ranjbar, S., Farahmand Nejad, M. A., Álvarez-Diduk, R., Idili, A., Hormozi-Nezhad, M. R., Arben Merkoçi. A novel dual fluorescent approach for the modulation of the dynamic range of lateral flow immunoassays, *Adv. Mater. Technol.*, **2022**, 2101450.

- Farahmand Nejad, M. A., Ranjbar, S., Parolo, C., Nguyen, E.P., Álvarez-Diduk, R., Hormozi-Nezhad, M.R., Merkoçi, A. Electrochromism: An emerging and promising approach in (bio) sensing technology. *Mater. Today*, **2021**, 50, 476-498.

- Ranjbar, S., Farahmand Nejad, M. A., Parolo, C., Shahrokhian, S. Merkoçi, A. A smart chip for visual detection of bacteria using the electrochromic properties of polyaniline. *Anal. Chem.*, **2019**, 91, 14960-14966.

- Shahrokhian, S., Ranjbar, S. Development of a Sensitive Diagnostic Device Based on Zeolitic Imidazolate Frameworks-8 Using Ferrocene–Graphene Oxide as Electroactive Indicator for Pseudomonas aeruginosa Detection. *ACS Sustain. Chem. Eng.*, **2019**, 7, 12760-12769.

- Ranjbar, S., Shahrokhian, S. Design and fabrication of an electrochemical aptasensor using Au nanoparticles/carbon nanoparticles/cellulose nanofibers nanocomposite for rapid and sensitive detection of Staphylococcus aureus. *Bioelectrochem.*, **2018**, 123, 70-76.

- Ranjbar, S., Shahrokhian, S., Nurmohammadi, F. Nanoporous gold as a suitable substrate for preparation of a new sensitive electrochemical aptasensor for detection of Salmonella typhimurium. *Sens. Actuators B Chem.*, **2018**, 255, 1536-1544.

- Shahrokhian, S., Ranjbar, S. Aptamer immobilization on amino-functionalized metal–organic frameworks: an ultrasensitive platform for the electrochemical diagnostic of Escherichia coli O157: H7. *Analyst*, **2018**, 143, 3191-3201.

- Shahrokhian, S., Ranjbar, S., Ghalkhani, M. Modification of the Electrode Surface by Ag Nanoparticles Decorated Nano Diamond-graphite for Voltammetric Determination of Ceftizoxime. *Electroanalysis*, **2016**, 28, 469-476.

Presentations

- Modification of the electrode surface by nano-diamond graphite nano mixture, decorated by Ag nanoparticles for voltammetric determination of ceftizoxime. 21th Iranian seminar of analytical chemistry, Shahid Chamran University of Ahvaz, 14-16 March **2015**.

- Comparative study of carbon nanostructures and metal nanoparticles- based electrochemical sensor for sensitive determination of ceftizoxime. 22th Iranian seminar of analytical chemistry, Chemistry and Chemical Engineering Research Center of Iran, 26-28 January **2016**.

- Design and fabrication of a new electrochemical aptasensor based on the electrode modified with Au Nanoparticles/Carbon Nanoparticles/Cellulose Nanofibers nanocomposite for rapid and sensitive detection of Staphylococcus aureus. 7th International Conference on Nanostructures. 27 February-1 March **2018**.

- Label-Free Impedimetric Aptasensor for Detection of Salmonella Typhimurium Based on Nanoporous Gold. 7th International Conference on Nanostructures. 27 February-1 March **2018**.
- Experimental and Theoretical Studies of Modified Electrode Based on MXene for Escherichia coli detection. The Annual Physics Conference of Iran 1400. 23-26 August **2021**.

- A review on electrochemical, optical and electrochromic biosensors, Scientific lecture at National Institute of Genetic Engineering and Biotechnology (NIGEB), February **2024**

Teaching and Research Experiences

- Instructor for graduate students in Biotechnology, National Institute of Genetic Engineering and Biotechnology (NIGEB)
  Nanobiotechnology, **2024**
  Environmental Biotechnology, **2023**

- Instructor for undergraduate students in Chemical Engineering, Sharif University of technology,
  Analytical Chemistry, **2023**

- Teacher assistant, Sharif University of technology
  Analytical Chemistry (I) and Analytical Chemistry (II) and laboratories, **2015-2018**

- Chief Investigator (CI), National Institute of Genetic Engineering and Biotechnology (NIGEB), ***project subject:*** Design and development of visual diagnostic kit for detection of *Escherichia coli* based on fluorescent nanostructured materials, **2024- Present**

- Principal Investigator (PI), joint project between NIGEB, Sharif university and Monash University (Australia), ***project subject:*** Smart labels based on nanomaterials for food packaging and plant stress control, **2024- Present**

- Principal Investigator (PI), joint project between Sharif university and Moscow State University (Russia), ***project subject:*** Developing scanning probe microscopy techniques to shed light on nanostructures-surface interfaces, **2020- 2022**

- Chief Investigator (CI), The Research Institute of Petroleum Industry (RIPI), ***Project subject:*** "Development of Smart Tracers based on Carbon Quantum Dots for Enhanced Oil Recovery (EOR) Applications"

- Research assistant, Sharif University of technology, **2016-2017**

- Research assistant, ICN2-Barcelona, **2018-2019**

Honors/Awards/Scholarships

- Third rank in 26th Khwarizmi Youth Award (KYA), **2025**
- Dr. Kazemi Ashtiani Award, Iran's National Elites Foundation, **2024**
- Dr. Shahriari Award, Iran's National Elites Foundation, **2022**
- Post-doctorate grant, Iran National Science Foundation, **2021**
- Post-doctorate grant, Iran Science Elites Federation, **2020**
- Scholarship Award, Ministry of Science, Research and Technology (Iran), **2018**
- Iran Nanotechnology Initiative Council Award, **2017**
- Iran Nanotechnology Initiative Council Award, **2015**
- Top student (first rank) among analytical chemistry's Ph.D. students at Sharif University of Technology (**2015-2019**)
- Top student (third rank) among analytical chemistry's M.Sc. students at Sharif University of Technology (**2013-2015**)
- Top student (first rank) among B.Sc. students at Kharazmi University of Tehran (**2009-2013**)
- Distinguished Student of Chemistry department among B.Sc. students, Kharazmi University of Tehran (**2013**)
- 7th Rank in Chemistry Nationwide Competitive MS Entrance Exam (**2013**)
- 9th Rank in Chemistry Nationwide Competitive Ph.D. Entrance Exam (**2015**)

Professional Involvment

- Member of scientific & executive committee of the 23rd Iranian Seminar of Analytical Chemistry (ISAC23), Sharif University of Technology, Iran, **2016**
- Member of scientific & executive committee of 7th International Conference on Nanostructures, Tehran-Iran, **2018**.
- Organizer of the HPLC & GC chromatography workshop, Tehran University, **2019**
- Organizer of the HPLC & GC chromatography workshop, Sharif University of Technology, **2022**