

ALI JAFARI

Tehran, Iran 14588-13618 | +98 912-305-7035 | alijafari@iribu.ac.ir| [scholar.google.Jafari](https://scholar.google.com/citations?user=Jafari)

EDUCATION

Ph.D. in Radiation Applications Engineering – Nuclear Science and Technology Research Institute, Tehran, Iran

Graduation Date: May 2020

GPA: 3.47/4

Dissertation: Production and Quality Control of Theranostic Radioisotope Scandium-47 Using Cyclotron and its Biological Distribution Study

Advisor: Prof. M. R. Aboudzadeh

M.Sc. in Medical Radiation Engineering – Islamic Azad University, Science and Research Branch, Tehran, Iran

Graduation Date: July 1999

GPA: 3.36/4

Thesis: Investigation and Correction of Photon Attenuation Effect in Radioisotopic Imaging

Advisor: Prof. M. E. Hosseini Ashrafi

B.Sc. in Applied Physics – Sharif University of Technology, Tehran, Iran

Graduation Date: May 1997

Final Project: Design and Implementation of Electricity and Magnetic Laboratory

Advisor: Prof. M. A. Vesaghi

CURRENT EMPLOYMENT POSITION

Assistant Professor in Physics at " IRIB University", Tehran, Iran (Sep 2000 - Now)

ACADEMIC WORK EXPERIENCE

Assistant Professor in Physics at " IRIB University", Tehran, Iran (Sep 2000 - Now)

- Leadership and Management
- Responsibility for Teaching and Students
- Responsibility for Research
- Knowledge Transfer
- People Management
- Development of Academic/Research Standing

Director of Graduate Studies at " IRIB University", Tehran, Iran (Feb 2018 - May 2022)

- Leadership and Management
 - Responsibility for Students
 - Responsibility for Research
 - Quality Assurance
 - Development of Academic/Research Standing
 - Oversaw graduate programs, research guidance, and knowledge transfer, while managing financial and academic resources
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RESEARCH INTERESTS

- Emission Tomography Imaging
 - MRI and PET imaging
 - Theranostic Radiopharmaceuticals
 - Brachytherapy
 - Internal Dosimetry and Radiological Treatment Optimization
 - Photoacoustic Imaging
 - Acoustics
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RESEARCH EXPERIENCE

Assistant Professor in Physics

IRIB University, Tehran, Iran

Duration: September 2000 – Now

- Led research initiatives in acoustics, physics, and radiological imaging.
 - Perform research in the area of radiological imaging, focusing on enhancing the Quality of PET Brain Images using artificial intelligence algorithms.
 - Perform research in the area of acoustics physics focusing on sound absorbing material by Impedance tube and sound level meter to measure the sound absorption properties of surfaces and materials, and measurement of sound intensity, 3D particle velocity, 3D impedance, sound power, and sound pressure in real time.
 - Managed research projects on radiopharmaceutical isotope production and applications in medical imaging and Acoustics.
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SELECTED RESEARCH PROJECTS

- **Scandium-47 Theranostics:** Led the production and quality control of theranostic radioisotope Scandium-47 using a cyclotron and conducted biological distribution studies.

- **Artificial Intelligence in Medical Imaging:** Enhancing the Quality of PET Brain Images Using AutoGANcoder Algorithms.
- **Medical Dosimetry:** Performed Monte Carlo simulations to optimize dosimetric parameters for brachytherapy and radiotherapy applications.
- **Radioisotopic Imaging:** Investigation and Correction of Photon Attenuation Effect in Radioisotopic Imaging
- **Sound Absorption:** Correlation between specific gas permeability and sound absorption coefficient in solid wood.

PUBLICATIONS

Journal Articles:

- Razavi Satvati, R.S., Vosoughi N., Ghafarian, P., **Jafari, A.** (2025). "Enhancing the Quality of PET Brain Images Using AutoGANcoder Algorithms" *Transaction on Biomedical Engineering Applications and Healthcare (TBEAH)*, 6(1), 9-13.
- **Jafari, A.**, Aboudzadeh, M. R., Sharifian, M., Sadeghi, M., Rahiminezhad, A., Alirezapour, B., Rajabifar, S. (2021). "A Theoretical and Experimental Study of the Theranostic Radionuclide Scandium-47 in Karaj Cyclotron" *Journal of Nuclear Science and Technology*, 42(2), 113-121.
- **Jafari, A.**, Aboudzadeh, M. R., Sharifian, M., Sadeghi, M., Rahiminezhad, A., Alirezapour, B., Rajabifar, S. (2020). "Cyclotron-Based Production of the Theranostic Radionuclide Scandium-47 from Titanium Target" *Nuclear Instruments and Methods in Physics Research Section A*, 961, 163-643.
- **Jafari, A.**, Aboudzadeh, M. R., Azizakram, H., Sadeghi, A., Alirezapour, B., Rajabifar, S., Yousefi, K. (2019). "Investigations of proton and deuteron induced nuclear reactions on natural and enriched Titanium, Calcium and Vanadium targets, with special reference to the production of ^{47}Sc " *Applied Radiation and Isotopes*, 152, 145-155.
- Sadeghi, M., Farshadi, A., Saidi, P., Hosseini, S. H., **Jafari, A.** (2018). "Monte Carlo Dosimetry for ^{125}I Eye Plaque Brachytherapy" *Journal of Nuclear Medicine and Radiation Therapy*, 9(4), 1000367.
- Sadeghi, M., Mohammadi, Z. K., **Jafari, A.** (2018). "Monte Carlo Calculations of Dosimetric Parameters for a New Design ^{125}I Source" *Journal of Nuclear Medicine and Radiation Therapy*, 9(4), 1000369.
- Sadeghi, M., Davoudi, A., Athari Allaf, M., **Jafari, A.** (2018). "Investigation of Dosimetric Parameters of HDR Cobalt-60 after-loading Brachytherapy Source using Monte Carlo Fluka Code" *Journal of Nuclear Medicine and Radiation Therapy*, 9(2), 1000366.

- Shohani, M. E., Golgoun, S. M., Aminipour, M., Shabani, A., Mazoochi, A. R., Maghsoudi Akbari, R., Mohammadzadeh, M., Davarpanah, M. R., Sardari, D., Sadeghi, M., Babapour Mofrad, F., **Jafari, A.** (2016). "Study and full simulation of ten different gases on sealed Multi-Wire Proportional Counter (MWPC) by using Garfield and Maxwell codes" *Applied Radiation and Isotopes*, 115, 289-294.
- Taghiyari, H. R., Zolfaghari, H., Sadeghi, M. E., Esmailpour, A., **Jafari, A.** (2014). "Correlation between specific gas permeability and sound absorption coefficient in solid wood" *Journal of Tropical Forest Science*, 26(1): 92-100.
- **Jafari, A.**, Sadeghi, M., Attari, A. A. (2014). "Introducing Matrices Defining Elements for n-Dimensional Polytopes and Representing a Number of Lie Groups via Them" *Journal of Advanced Mathematics and Applications*, 3, 31-38.
- **Jafari, A.**, Moghimi, A. (2008). " Solid phase extraction of ultra trace amounts of cobalt and nickel on octadecyl bonded silicamembrane diskmodifiedwithCyanex272 and determination by inductively coupled plasma-optical emission spectrometry" *Analytical Chemistry: An Indian Journal*, 7(1), 35-41.
- **Jafari, A.**, Moghimi, A. (2008). "Application of a new water-soluble polyethylenimine polymer sorbent for simultaneous separation and preconcentration of trace amounts of copper and cobalt and their r determination by atomic absorption spectrophotometry" *Analytical Chemistry: An Indian Journal*, 7(1), 42-47.
- **Jafari, A.**, Moghimi, A. (2007). "Selective pre-concentration and solid phase extraction of mercury(II) from natural water by alumina -loaded bis (2-hydroxyphenylamino) glyoxime phases" *Oriental Journal of Chemistry*, 23(1), 129-136.
- **Jafari, A.**, Moghimi, A. (2007). "Solid phase extraction of trace Copper(II) using octadecyl silica membrane disks modified Isopropyl 2-[(isopropoxycarbothiioyl)disulfanyl] ethane thioate" *Oriental Journal of Chemistry*, 23(1), 141-150.

Conference Articles:

- Razavi Satvati, R.S., Vosoughi N., Ghafarian, P., **Jafari, A.** (2024). "Enhancing the Quality of PET Brain Images Using AutoGANcoder Algorithms", International Conference on Medical Physics (ICMP-24), Antalya, Turkey.
- Aboudzadeh, M.R., **Jafari, A.**, Aardaneh, K., Alirezapour, B., Rajabifar, S., Yousefi, K., Rahiminezhad, A., Boluri, F. (2019). "Study on production of ⁴⁷Sc as a therapeutic radionuclide using a cyclotron", 3rd Research Coordination Meeting on Therapeutic Radiopharmaceuticals Labelled with New Emerging Radionuclides (⁶⁷Cu,¹⁸⁶Re, ⁴⁷Sc), *IAEA Headquarters, Vienna, Austria*, 112-144.
- **Jafari, A.**, Bazayr, P. (2009). "Introduction of illusionary advertising", Advertising Conference, *IRIB University, Tehran, Iran*, 127-131.

- Ghafari, A.A., **Jafari, A.**, Karami, H., Farahmandjo, M., Ghazi Maghrebi, F. (2007). “Diffusion Oxygen Tracer and Average Energy in High Temperature superconductor $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$ by Extension of ASYNNNI with Monte Carlo simulation”, *Annual Physics Conference of Iran, Yasuj, Iran*, 1160-1163.
 - **Jafari, A.** (2007). “Calculating the volume of an n-dimensional hypersphere”, 2nd Broadcast Engineering Conference, *IRIB University, Tehran, Iran*, 223-225.
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Books

- **Jafari, A.** (2021). "Applied Mathematics for Electrical Engineering" *Publisher: IRIB University.* (Farsi).
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TEACHING EXPERIENCE

Engineering Department, at "IRIB University", Tehran, Iran

- Physics of Acoustics,
- Electroacoustics,
- Physics of Sound,
- Acoustic Lab,
- General Physics,
- Engineering Mathematics,
- Differential Equations,
- Applied Mathematics,
- Numerical Computation,
- General Mathematics

Physics Department, at " Varamin Branch, Islamic Azad University", Tehran, Iran

- Analytical Mechanics,
 - Acoustics,
 - Thermodynamics,
 - Nuclear Physics,
 - Optics,
 - General Physics
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REVIEWER AND EDITOR

- **Journal of Theoretical and Applied Vibration and Acoustics**
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SKILLS

- **Analytical and Simulation Tools:** MATLAB, Python, MCNP

- **Medical Imaging Techniques:** Emission Tomography, Radiological Imaging, Photoacoustic Imaging
 - **Dosimetry Simulation Tools:** Monte Carlo, FLUKA
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AWARDS & HONORS

- **Exemplary Faculty Member** – IRIB University, 2008
- **Outstanding Researcher** – Islamic Azad University, Varamin Branch, 2006