



PERSONAL INFORMATION

Hamed KHODADADI Chamgordani

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Sex: Male | **Date of birth:** 1986-04-12



A Nuclear Engineer with over a decade of experience. A fast learner, capable of working independently with minimum supervision and committed to providing high-quality service to every nuclear project, focusing on reactor design and fuel performance analysis. A professional, skilled, and motivated individual who consistently performs in challenging environments.

WORK EXPERIENCE

July 2012 – Present Nuclear Engineer and Fuel Performance Specialist (Freelancer)

- Development of fuel performance analysis codes (for both plate- and rod-type fuels)
- Computer modeling of fuel behaviour under operation conditions I, II, and III
- Preparing technical documents based on NUREG-0800 and IAEA NF-T-5.2
- Uncertainty quantification and sensitivity analysis on computer modeling
- Development of SUAP code (for UQ&SA purposes)
- Collaboration in IAEA CRP ATF-TS as National project CSI.
- Software development for simulation of reactor core dynamics
- Software development to facilitate criticality accident assessment in fuel fabrication facilities.
- Criticality analysis and dose calculation for fuel manufacturing facilities
- Modeling and design of radioactive transport package for U(5%)O₂ powder
- Project planning and management:
 - Collaboration in preparing work breakdown structure (WBS) for several projects.
 - Consultant to implement an interactive procedure for fuel design with test facility design.
 - Consultant to review WBS and project plans to substitute halted activities.
 - Consultant to define Technical Co-operations (TCs) with IAEA.
- On-the-job training courses:
 - IAEA ( International Atomic Energy Agency):
 - Fuel Design Safety Criteria and Safety Limits (M. Veshchunov)
 - Fuel Licensing (P. Petkov)
 - Auditing final safety analysis report
 - General aspects on fuel Thermal-Mechanical modeling (P. Van Uffelen)
 - Thermal-Mechanical test of fuel cladding (Z. Hozer)
 - Thermal-Hydraulic analysis and experiment design (Ch. H. Song)
 - ENEN ( GRE@T-PIONEER):
 - Neutron transport at the fuel cell and assembly levels (C. Demaziere)
 - Radiation protection in nuclear environment (M. Szieberth)
 - Reactor Operator based on Balakovo NPP simulator
 - Operator Training based on University Teaching Reactor Simulator (UTRS)

2005 - 2015 Volunteer Works (during graduation)

- To join student's scientific association of the faculty of physics during BS and coordinate different events such as scientific visits, training courses, and welcome ceremonies for new students.
 - To establish Scientific Association for postgraduate students at the University of Isfahan (for the first time) during MS degree.
 - To hold different training courses (for free) on Numerical calculations, Nuclear codes, and Documentation and manuscript preparation, during PhD graduation.
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EDUCATION

Sep. 2013 – Jan. 2020

PhD in Nuclear Engineering

University of Isfahan (UI), Isfahan, IRAN

- Final Project: Conceptual Design of an AHR aimed to produce Medical Isotopes (Mo-99)
- Honour: Ranked 3rd among 159 participants in the National PhD Entrance Exam (2013) in the field of Nuclear Engineering, Reactor.

Sep. 2009 – Oct. 2011

Master in Nuclear Engineering

University of Isfahan (UI), Isfahan, IRAN

- Final Project: MNSR core conversion from HEU to LEU
- Honour: Ranked 1st among 5 students of Nuclear Reactors Engineering at the University of Isfahan

Sep. 2005 – Jul. 2009

BS in Atomic and Molecular Physics

Yazd University, Yazd, IRAN

- Project: Automated best fit numerical calculations on experimental data

SKILLS

- Thermal-Mechanical analysis using fuel performance codes such as FRAPCON/FRAPTRAN, FEMAXI, and OFFBEAT (an open-source TM code based on OpenFOAM). Also, basic familiarity with TRANURANUS.
- Thermal-Mechanical analysis of nuclear fuels (plates and rods) using ABAQUS (including Subroutine application and Python scripting).
- Neutronic analysis using MCNP, ORIGEN, WIMS/CITATION, PARCS, as well as OpenMC and CASMO-4.
- Thermal-Hydraulic (system) analysis using RELAP5, TRACE, and COBRA by SNAP
- Uncertainty Quantification and Sensitivity Analysis using SUAP. Also, basic familiarity with DAKOTA.
- Programming: PYTHON (including Machine Learning), MatLab, and LabVIEW (especially for design and simulation purposes and Image processing). Also, basic familiarity with FORTRAN and C++.
- Familiar with ANSYS package (such as WORKBENCH, MESHING, FLUENT, and CFX).
- Project Management Software: MS Project.
- Familiar with CAD software.
- Fluent in English.

INTERESTS

- Irradiation-induced Material Degradation
- Finite Element Modeling (FEM) for Structural Analysis
- Computational science in nuclear engineering and code development,
- Advanced Technology and Accident Tolerant Fuels (ATFs),
- Small Modular Reactors (SMRs), and Gen IV reactors,
- Fusion power generation systems (TOKAMAK)

PUBLICATIONS

- Hamed Khodadadi Chamgordani, S. M. Mostajaboddavati, B. T. Sichani, “Comment on the paper “Post-Shutdown decay power and radionuclide inventories in the discharged fuels of HEU and potential LEU miniature neutron source reactors” by Mirza et al. [Ann. Nucl. Energy 37 (2010) 701–706]”, *Annals of Nuclear Energy* 38 (2011) 2863–2864, <https://doi.org/10.1016/j.anucene.2011.07.022>
 - Hamed Khodadadi, Navid Ayoobian, “Conceptual design and uncertainty analysis of a typical 50 kW aqueous homogeneous reactor aimed for medical isotope production”, *Progress in Nuclear Energy*, Volume 121, 2020, 103233, ISSN 0149-1970, <https://doi.org/10.1016/j.pnucene.2019.103233>.
 - Hamed Khodadadi, Amir Zareidoust, “Study on the production of Cr-coated Zr-1%Nb tubes as an ATF evolutionary cladding candidate”, *Radiation Physics and Engineering* 2022; 3(2):31–36, <https://doi.org/10.22034/rpe.2022.334593.1059>
 - Hamed Khodadadi, Kamyar Sabetghadam, “Development of SUAP toolkit for performing Uncertainty Quantification and Sensitivity Analysis in Fuel Performance Modeling”, *Radiation Physics and Engineering* 2022; <https://doi.org/10.22034/rpe.2022.348646.1093>.
 - H. Mohammadi, N. Ayoobian, H. Khodadadi, “Analytical and Experimental Thermal-Hydraulic characterization of a proposed 50 kW Aqueous Homogeneous Reactor (AHR) aimed at medical isotope production”, Under Review
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