

Curriculum Vitae

Assistant Professor

Dr. YARA HADDAD

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❖ Education

- 2014 - March 2018 **Ph.D. in nuclear energy, Minor in material science**
University Paris-Saclay/University Paris sud, France
Dissertation title: Investigation of the formation mechanisms of the High Burnup Structure in the spent nuclear fuel – Experimental simulation with ions beams
- 2012 - 2014 **Master in nuclear engineering**
ENSTA-ParisTech, France
Specialty: Nuclear Plant Design (NPD)
- 2007 – 2012 **Bachelor in nuclear engineering**
Jordan University of Science and Technology, Jordan
Graduate (GPA = 85.3 %, excellent)

❖ Research and teaching interests

- Nuclear Engineering
- Mechanical Engineering - Thermo-Fluids
- Material science
- Renewable energy
- Materials characterization
- Modeling and simulation
- Data analysis

❖ Scholarship, Honors and Awards

1. Awarded a full scholarship to attain the Doctoral degree in nuclear energy in France - French government.
2. Awarded a full scholarship to attain the Master degree in nuclear Engineering in France - French government + JAEC
3. Award of - MICHEL CANTAREL - Bourse
Description: To encourage young researchers' works awarded by French Vacuum Society (SFV) for best oral presentation at IBAF Conference 2016
4. Participated in the international youth exchange program in Japan, participating in the environment course and having a certificate of being the best participant, 2011.
5. Certificate of appreciation from the Jordanian Engineers Association for the active contribution to serving various activities in the association

❖ Work experience

- Sep. 2021– present: Assistant Professor, Philadelphia University - Faculty of Engineering and Technology - Alternative Energy Technology Department
 - 2014 – March 2018 Researcher/Ph.D. student, University Paris-Sud/CSNSM, France.
 - Characterization of materials under ion irradiation, structural and physical-chemical properties and damage created (in/ex-situ RBS/C, in/ex-situ TEM, and XRD)
 - Implementation of experimental protocols:
 - prepare the samples
 - irradiate the samples
 - analyze irradiated samples using non-destructive methods
 - Analysis and simulation of data by Monte-Carlo simulation
 - Investigate and reproduce the specific features of the microstructure of the high burnup structure of the irradiated nuclear fuel.
 - Studying the effect of temperature on the damage evolution in irradiated materials
 - Explore the various relevant parameters involved in the formation of high burnup structure, in evaluating their importance, and in clarifying the synergies between them.
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- 2014 University Paris-Sud/CSNSM, France.

Internship of Master M2– nuclear engineering

Title: Investigation of the behavior of Urania under low-energy ion irradiation

- Characterization of nuclear materials, physics of defects in solids, ion beam analysis, safety and radiological protection, modeling.
 - Rigor and scientific method
 - Analysis and simulation of data by Monte-Carlo simulation
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- 2013 University Paris-Sud/IPNO, France.

Internship of Master M1 – Nuclear physics

Title: Simulation of LaBr₃ scintillators and Subtraction the detector response of to measure prompt fission Gamma -rays of ²³⁸U with LICORNE project

- Simulate the response of a lanthanum bromide (LaBr₃) scintillator detector by using MCNP code
 - A full response matrix was built by ROOT
 - Participate in many Gamma-rays detection experiments
 - New method was introduced by Matlab to get the real Gamma-rays emission and subtract the detector response
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- 2012 Jordan university of science and technology, Jordan

Graduation project – Nuclear engineering / thermal hydraulic

- Studying operation and safety in PWR reactors
- Analyzing the changes in thermal hydraulic parameters during loss of cooling accident (LOCA), LOCA accident in EPR and APR KSNR 1400 W reactors
- Using PCTRAN program to monitor thermal hydraulic parameters during severe accidents

❖ **TOUGHT COURSES**

- Fluid Mechanics
- Heat Transfer
- Material science
- Strength of Materials
- Nuclear energy
- Occupational Safety
- Energy Environmental Impacts
- Environmental pollution

❖ **VOLUNTEER WORK AND COMMITTEES:**

- 1- Member of the behavior guidance committee at Philadelphia university, representing the faculty of Engineering and technology.
- 2- Member of Quality Assurance Committee inside faculty of engineering at Philadelphia University, representing two departments (Renewable Engineering Energy and Alternative Energy Technology departments).
- 3- Participant Member of ABET committee inside the Renewable Energy Engineering department.
- 4- Participant Member of academic advisory inside Renewable Engineering Energy and Alternative Energy Technology departments.
- 5- Member of IREEDER Day Committee, organizer for the event and session coordinator for the renewable energy session
- 6- Voluntary participation in community service - Painting the sidewalks of Yarmouk University – 8 October 2022

❖ **PROFESSIONAL MEMBERSHIPS:**

2012 – Present: Member of Jordan Engineers Association.

❖ **Language and computer skills**

Language

- Arabic: Mother tongue
- English: Fluent in (speaking, writing, reading and comprehension)
- French: advanced level - Professional use
- German: Intermediate – Level B1

Computer skills programming language: C/C++, FORTRAN, Matlab, ROOT.

Monte-Carlo Codes – MCNP, McChasy

Using PCTRAN

❖ Publication

1. **Yara Haddad**, Lucie Delauche, Aurélie Gentils, Frederico Garrido. “In situ characterization of irradiation-induced microstructural evolution in UO₂ single crystals at 773 K”. Nuclear Inst, and Methods in Physics Research B, Volume 435, 15 November 2018, Pages 25-30.
<http://doi.org/10.1016/j.nimb.2017.12.019>
2. A. Debelle, D.Bachiller-Perea, M. Béhar, L. Thomé, A. Boulle, **Yara Haddad**, B. Uberuaga, F. Garrido, E. Martinez, and Jean-Paul Crocombette. “How relative defect migration energies drive contrasting temperature-dependent microstructural evolution in irradiated ceramics”, 14 August 2018, <https://doi.org/10.1103/PhysRevMaterials.2.083605>.
3. Mokhtar Ali Amrani, **Yara Haddad**, Mohammed Abdulhameed, Omar S. Hyder, Ameen Saif, Atef M. Ghaleb, Sobhi Mejjaouli, “A Lubricating Oil-Based Maintenance for Diesel Engines at the end-user: An Effective Predictive Approach”, accepted at Jordan Journal of Mechanical and Industrial Engineering, will be published on December 2022.

❖ Conferences

1. Yara Haddad, Frédéric Garrido, Aurélie Gentils. “Investigation of the behavior of Uranium dioxide under Low-energy ion irradiation”, 3M Colloque « Matériaux, Mécanique, Microstructure », INSTN - CEA Saclay, France, 18-19 June 2015.
2. **Yara Haddad**, Frédéric Garrido, Aurélie Gentils. “In-Situ TEM experiment to simulate rim structure formation”, the Fourth Workshop on TEM with in Situ Irradiation (WOTWISI 4), Orsay & Gif sur Yvette, France, 16-18 March 2016.
3. **Yara Haddad**, Frédéric Garrido, Aurélie Gentils. “Investigation of the formation mechanisms of the High Burnup Structure in the spent nuclear fuel – Experimental simulation with different characterization techniques with ion beams”, IBAF Conference, ANNECY, France, 26-30 September 2016.
4. **Yara Haddad**, Frédéric Garrido, Aurélie Gentils. “Investigation of the formation mechanisms of the high burnup structure in the spent nuclear fuel – experimental simulation by in situ transmission electron microscopy experiment with ion beams”, NuMat2016 Conference, Montpellier, France, 7-10 November 2016.
5. **Yara Haddad**, Frédéric Garrido, Aurélie Gentils. “Formation mechanisms of the high burnup structure in the spent nuclear fuel – in situ experimental simulation with ion beams in Urania”, REI-19 Conference, Versailles, France, 2-7 July 2017.
6. **Yara Haddad**, Frédéric Garrido, Aurélie Gentils. “Investigation of the formation mechanisms of the high burnup structure in the spent nuclear fuel – in situ experimental simulation with using ion beams”, ICMSR-2017, Dubai, 16-18 November 2017.

❖ Workshops and trainings:

1. IREEDER training workshop (Renewable Energy), 29 September 2022, Aqaba, Jordan.
2. IREEDER training workshop (Renewable Energy), 22-26 November 2021, Patras, Greece.
3. Thermal hydraulics and safety, International school in nuclear engineering 2017, CEA, France.
4. Materials for nuclear reactors, fuels and structures, International school in nuclear engineering 017, CEA, France.
5. Fundamental aspects of the transmission electron microscopy training, 2015, ICMPE- CNRS, France.