



Awni Alkhazaleh

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📍 Amman - Jordan

👤 Male

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EDUCATION

PhD., Mechanical Engineering / Thermals and Energy (Full time)
The University of Bolton, Institute for Materials Research and Innovation, Greater Manchester, United Kingdom, (Jan 2015 –August 2018)

Thesis Title: Thermal Energy Storage and Fire Safety of Building Materials.

Research objective: This research aims to develop fire safe and energy efficient building materials using phase change materials and flame retardants. Preparation, Thermal, Energy storage, Mechanical, Morphology and Flammability properties of materials have been studied.

MSc., Mechanical Engineering / Thermals, Department of Mechanical Engineering, Faculty of Engineering, University of Jordan, Amman, Jordan (2012-2014).

Thesis Title: Modeling and Design of Smoke Control System for Regular Large Atrium in Mercantile Buildings in Jordan.

BSc., Mechanical Engineering / Production Engineering and Machines, Department of Mechanical Engineering, Faculty of Engineering, Albalqa Applied University, Al-Salt, Jordan. (2000-2005)

WORK EXPERIENCE

Assistant Professor, Head of Mechanical Engineering Department (Jan 2019 - Now)
AlBalqa Applied University / Prince Hussein bin Abdullah II Academy of Civil Protection, Amman – Jordan.

- Lecture 3rd, 4th and 5th year students on various mechanical engineering modules such as: Heat and mass transfer, solar energy, Energy management, Energy storage, Strength of materials, Materials science, Engineering measurement, Structure design for fire safety, Fire behaviour of materials, Fire dynamic, Modeling of fire and smoke control system, Active and passive fire protection, Design of fire protection systems, and Fire engineering fundamentals.
- Supervise 5th year students on their graduation projects which are related to the energy, fire and materials science research areas.
- Head of several committees to establish fire, materials, energy and heat transfer laboratories by determining the specifications for the fire, materials, energy and heat transfer equipment, which are used to study the energy storage, thermal, mechanical, fire and heat transfer properties of materials.

Teaching Assistant, Institute for Materials Research and Innovation (IMRI) (Oct 2015 – Mar 2018). The University of Bolton, United Kingdom

- Lectured 1st and 2nd year students on various mechanical engineering modules including strength of materials, heat and mass transfer and mechanical fluid.
- Assisted in teaching undergraduate courses, supervised practical work, advising on skills, methods and techniques.
- Conducted tutorials with students, marked assignments and created module handouts for lectures.
- Helped with ongoing development and design of the curriculum, created lesson plans, and wrote formative assessments to assess students learning.
- Prepared the required materials for the classes including preparing the presentation slides for lectures.
- Assisted faculty members with classroom activities including grading assignments, and monitoring students.
- Cooperated with professors to carry out research on enhancing the thermal energy storage of materials and decrease the flammability of materials.

Mechanical Engineer, General Directorate of Civil Defense, Jordan (Oct 2005- Dec 2014)

1. Head of mechanical engineering department. *The duties of this position are:*

- A. Deliver the training courses to the staff.
- B. Team leader of design of fire fighting systems for buildings and testing these systems according to the international standards.
- C. Prepare and study of fire evacuation plans, fire strategies and design reviews for the new construction projects.
- D. Study the budgets of fire and safety projects.
- E. Distribute the duties of work to the members according to their qualifications.
- F. Study and evaluate the energy auditing of buildings.
- G. Lecturer for many training courses of protection and self prevention from the fire.

2. Fire protection engineer. *The duties of this position are:*

- A. Design of firefighting systems including their hydraulic calculations according to the international standards (**BS, NFPA, ASHRAE**), these systems include:
 1. Sprinkler systems (dry, deluge, pre-action, wet)
 2. Hydrant and Siamese connection
 3. Dry and wet landing valve
 4. Hose reel and hose rack
 5. Fire extinguishers
 6. Clean agent systems (FM 200, CO₂, NAFS-111)
 7. Deluge foam-water systems
 8. Water spray fixed systems
 9. Pressurization systems for stairs in high rise buildings
 10. Smoke control systems for atriums
 11. Mechanical ventilation for cellars floors
 12. Fire alarms

13. Fire water storage tanks and fire pumps

- B. Supervising the processes of installing firefighting systems and alarm systems according to the international standards.
- C. Test the imported firefighting systems (portable fire extinguishers, wheeled fire extinguishers, fire hoses and hose rack with different diameters, pulleys, ejectors and sprinklers heads) to determine their conformity with the international standards.
- D. Member of a committee which aimed to find and figure out the problems of firefighting systems in the complex buildings.
- E. Member of a committee which aimed to modify and develop the Jordanian code of firefighting systems.

RESEARCH INTERESTS

Renewable energy, Heat and mass transfer, Thermal energy storage, Phase change materials, Solar energy, Photovoltaic solar panels, Building energy, Materials science, Flame retardants, Flammability, Active and passive fire protection systems and Fire behaviour of materials.

CONFERENCES

1. Occupational Health and Safety Conference, 26-27 October, 2013, Amman-Jordan
2. SCI Fire and Materials Conference, 5 November 2015, Glasgow, UK
3. Postgraduate Research Students' Society Conference, 2016, Bolton, UK
4. Fire and Materials Conference, San Francisco, USA, 2017
5. International Conference on Renewable Energy Resources and Applications, Paris, France, 2017. (Best Paper Award)
6. Fire Retardant Polymeric Materials, Manchester, UK, 3-6 July, 2017
7. UK Energy Storage Conference, 20-22 March, 2018, Newcastle-UK
8. 14th International Conference on Energy Storage, 24-28 April, 2018, Turkey
9. The 6th International Conference on Building Materials and Materials Engineering, Barcelona, Spain, 15-17 September, 2022

PUBLICATIONS

- [1] Al-Husban, Y., Al-Ghriyah, M., Gaeid, K. S., Al Smadi Takialddin, A. H., & **Alkhazaleh, A. H.** (2023). Optimization of the Residential Solar Energy Consumption Using the Taguchi Technique and Box-Behnken Design: a Case Study for Jordan. *International Journal on Energy Conversion (I.R.E.CON.)*, Vol. 11, N. 1.
- [2] **Alkhazaleh, A. H.** (2023, April). Thermal and Flammability Properties of Flame Retardant Phase Change Material for Buildings Applications. In *Materials Science Forum* (Vol. 1082, pp. 284-289). Trans Tech Publications Ltd.
- [3] **Alkhazaleh, A. H.**, Almanaseer, W., & Alkhazali, A. (2023). Experimental investigation on thermal properties and fire performance of lauric acid/diphenyl phosphate/expanded perlite

as a flame retardant phase change material for latent heat storage applications. *Sustainable Energy Technologies and Assessments*, 56, 103059. (Q1 Journal)

- [4] **Awni H. Alkhazaleh**, Almanaseer, W., Ismail, M., Almashaqbeh, S., & Farid, M. M. (2022). Thermal and mechanical properties of cement based-composite phase change material of butyl stearate/isopropyl palmitate/expanded graphite for low temperature solar thermal applications. *Journal of Energy Storage*, 50, 104547. <https://doi.org/10.1016/j.est.2022.104547>, (Q1 Journal)
- [5] Mohammad Ismail, **Awni H. Alkhazaleh**, Jafar Masri, Abdullah Masoud Ali, Malek Ali, Experimental and Numerical Analysis of Paraffin Waxes during Solidification inside Spherical Capsules, *Thermal Science and Engineering Progress*, 2021, <https://doi.org/10.1016/j.tsep.2021.101095>, (Q1 Journal)
- [6] **Alkhazaleh, A. H**, Isopropyl palmitate integrated with plasterboard for low temperature latent heat thermal energy storage, *International Journal of Energy Research*, 2021; 1-13. <https://doi.org/10.1002/er.6537>, (Q1 Journal)
- [7] **Alkhazaleh, A. H**, Preparation and characterization of isopropyl palmitate / expanded perlite and isopropyl palmitate / nanoclay composites as form-stable thermal energy storage materials for buildings, *Journal of Energy Storage*, 32 (2020) 101679. <https://doi.org/10.1016/j.est.2020.101679>, (Q1 Journal)
- [8] Sahar Al Mashaqbeh; Jose Eduardo Munive-Hernandez; **Awni AlKhazaleh**; M. Khurshid Khan, Development of a risk assessment model for the customer performance perspective in power plants applying a system dynamics approach, *International Journal of Intelligent Engineering Informatics (IJIEI)*, Vol. 8, No. 5/6, 2020, <https://doi.org/10.1504/IJIEI.2020.115734>
- [9] Sahar Al Mashaqbeh., Jose Eduardo Munive-Hernandez., M. Khurshid Khan., **Awni AlKhazaleh**, Developing a systematic methodology to build a systems dynamics model for assessment of non-technical risks in power plants, *International Journal System of Systems Engineering*, Vol. 10, No. 1, 2020, <https://doi.org/10.1504/IJSSE.2020.105423>
- [10] ALMashaqbeh, S., Munive-hernandez, J.E., Khan, M.K., **Alkhazaleh, A.**, A System Dynamics Simulation Model for Environmental Risk Assessment at Strategic level in Power Plants, *International Journal of Reliability and Safety*, vol.14(1), pp. 58-84, 2020, <https://doi.org/10.1504/IJRS.2020.105902>
- [11] **Alkhazaleh, A. H.** and Kandola, B.K. Thermal and Flammability Properties of Paraffin/Nanoclay Composite Phase Change Materials Incorporated in Building Materials for Thermal Energy Storage. *International Journal of Energy and Power Engineering*, Vol:4, No:6, 2017

- [12] Kandola, B.K., **Alkhazaleh, A.H.** and Graham J. Milnes. The Fire Behaviour of Gypsum Boards Incorporating Phase Change Materials for Energy Storage in Building Applications. Fire and Materials Conference, San Francisco, USA, 2017
- [13] **Alkhazaleh, A. H.** and Duwairi, H., Analysis of Mechanical System Ventilation Performance in an Atrium by Consolidated Model of Fire and Smoke Transport Simulation, International Journal of Heat and Technology, vol. 33 (2015), no. 3, pp. 121-126.

✓ **A reviewer for Solar Energy journal** (Q1 Journal, impact factor: 4.60 (2020))

TRAINING COURSES

1. Foundation course of fire safety in buildings, 6 November, 2005 – 20 April, 2006, Amman-Jordan.
2. Course in prevention from fire (first place), 18 June - 13 July, 2006, Amman-Jordan.
3. Car Park Ventilation, 21 June, 2006, Amman- Jordan.
4. Course of investigation in the causes of fire, 31 August - 25 September, 2008, Amman-Jordan
5. Basic course to address the incidents of explosives in the Regional Centre of the International Organization of Civil Protection, 1-19 November, 2008, Cairo-Egypt.
6. Course in LPCB laboratories, this course discussed the energy and firefighting systems, 12-17April, 2011, London-UK.
7. Course in the design and installation of solar energy panels (Photovoltaic), September, 2019, university of Jordan, Amman-Jordan.
8. Course in the design and installation of wind energy, September, 2020, university of Jordan, Amman-Jordan.

PERSONAL SKILLS

- Interact and communicate effectively with people from diverse background, highlighting main points and reaching a solution to a problem in the most suitable and practical manner.
- Train and schedule employees effectively. In addition, I am an enthusiastic, self-motivated, reliable, responsible, hardworking person and comfortable dealing with different situations. Moreover, I have high skills in the research and development.

LANGUAGE SKILLS

- Arabic: Native
- English: Excellent

COMPUTER SKILLS

- Proficiency in Word, Excel, Power Point
- CFAST software
- TA universal Analysis
- SolidWorks
- AutoCAD
- MATLAB

REFERENCES

1. Prof. Baljinder Kandola

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2. Dr. Navneet Soin

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