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Education

PhD	Mechanical and Aerospace Engineering, Queen's University Belfast – UK- 2009. Thesis title: “The Effect of Processing On Structure and Properties of Polypropylene/Clay Nanocomposites”
M.Sc.	Chemical Engineering - University of Jordan- 2004
B.Sc.	Chemical Engineering- University of Jordan- 2001

Job Positions

Vice Director	05/2014-15/07/2022, 11/2024-present, Hamdi Mango Center for Scientific Research, The University of Jordan
Associate Researcher	05/2017-present, Research on Materials Engineering and Nanotechnology
Director	01/2018-09/2023, Nanotechnology Center, The University of Jordan
Assistant Researcher	03/2013-05/2017, Hamdi Mango Center for Scientific Research, The University of Jordan
Researcher	09/2011-02/2013, Hamdi Mango Centre for Scientific Research, The University of Jordan
Research Fellow	02/2009-5/2011, School of Mechanical and Aerospace Engineering- Queen's University Belfast – UK
Standardization Engineer	08/2002-08/2005- Jordan Institution For Standards and Metrology- Standardization Department – Jordan

As a researcher at the University of Jordan, I lead various research groups focusing on materials and nanotechnology. Our groundbreaking work involves developing nanomaterials for polymer nanocomposites, with a specific emphasis on water and wastewater treatment through photocatalytic degradation, adsorption, and polymeric membrane filtration. My expertise also extends to utilizing functionalized nanomaterials for targeted drug delivery to cancer cells and as potent antimicrobial agents. I served as the Principal Investigator (PI) of the Jordanian team, a key partner in the Horizon2020 Project

titled “Intelligent Water Treatment Technologies for water preservation combined with simultaneous energy production and material recovery in energy-intensive industries (intelWATT)”. Additionally, I have previously led the Jordanian team in the ERANETMED 2 project titled “Development of a solar-powered, zero liquid discharge Integrated DEsalination MembrAne system to address the needs for water of the Mediterranean region (IDEA)”, and have spearheaded numerous national projects focused on water treatment.

Publications

1. Mohusaien, R., Shibli, R., **Abu-Zurayk, R.**, Tahtamouni, R., & Al-Qudah, T. S. (2024). Silver nanoparticles enhance the mitigation of osmotic stress in *Chenopodium quinoa* microshoots grown under in vitro osmo-stressing conditions. *Brazilian Journal of Biology*, 84, e286851.
2. Al-Sawalmih, A., Al-Bataineh, Q. M., **Abu-Zurayk, R.**, Tavares, C. J., Etzkorn, J., Foadian, F., & Telfah, A. (2024). Optical, electrical and structural properties of iron doped zinc oxide nanostructures. *Journal of Materials Science: Materials in Electronics*, 35(17), 1159.
3. Hudaib, B., Al-Qodah, Z., **Abu-Zurayk, R.**, Waleed, H., & Omar, W. (2024). Fabrication of blended cellulose acetate/poly-pyrrole ultrafiltration membranes for crude oil wastewater separation. *Case Studies in Chemical and Environmental Engineering*, 9, 100692.
4. Rabba'a, M., **Abu-Zurayk, R.**, Abu-Irmaileh, B., Mallouh, S. A., & Bustanji, Y. (2024). In vitro studies on curcumin-loaded multiwalled carbon nanotubes antioxidant activities and cytotoxicity against Hep G-2 liver cancer cell lines. *Journal of Applied Pharmaceutical Science*.
5. **Abu-Zurayk, R.**, Alnairat, N., Bozeya, A., Khalaf, A., & Abu-Dalo, D. (2024). Enhanced Properties of PVDF Membranes Using Green Ag-Nanoclay Composite Nanoarchitectonics. *Materials Research Express*.
6. Al-Khaial, M. Q., Chan, S. Y., **Abu-Zurayk, R. A.**, & Alnairat, N. (2024). Biosynthesis and Characterization of Zinc Oxide Nanoparticles (ZnO-NPs) Utilizing Banana Peel Extract. *Inorganics*, 12(4), 121.
7. Al-Sawarees, D. K., Darwish, R. M., **Abu-Zurayk, R.**, & Masri, M. A. (2024). Assessing silver nanoparticle and antimicrobial combinations for antibacterial activity and biofilm prevention on surgical sutures. *Journal of Applied Microbiology*, 135(4), lxae063.
8. Telfah, A., **Abu-Zurayk, R.**, Al-Bataineh, Q. M., Tavares, C. J., Foadian, F., & Etzkorn, J. (2024). Optical and electrical analysis of polyethylene oxide/disodium hexachloroplatinate complex composite films. *Journal of Applied Polymer Science*, e54980.
9. Bozeya, A., Makableh, Y. F., Al-Mezead, L. A., & **Abu-Zurayk, R.** (2024). Wet ball milling and hot press for the preparation of UHMWPE/modified MWCNTs nanocomposite with enhanced mechanical and thermal properties. *Polymer Bulletin*, 81(2), 1707-1727.
10. Ahmad Telfah, Qais M. Al-Bataineh, Ahmad A. Ahmad, **Rund Abu-Zurayk**, Carlos J. Tavares, Johannes Etzkorn, Farzad Foadian, (2024), “Organic mixed ion-electron conductive composite films based on polyacrylic acid/polyaniline”, *Organic Electronics*, Volume 124.

11. Al Bawab, A., Bozeya, A., Makableh, Y. F., Khalaf, A., & **Abu-Zurayk, R. (2023).** Enhanced thermal and structural properties of UHMWPE/CNT nanocomposite sheets prepared by using melt compounding technique. *Polymer Bulletin*, 80(11), 12433-12445.
12. Abu-Zurayk, R. A., Hamadneh, I., Al-Tae, B. J., Al-Kayed, M. F., & Al-Dujaili, A. H. (2023). Adsorption of Pb (II) and Cr (III) ions and p-chlorophenol on polymethylmethacrylate-organobentonite Nanocomposite. *Polymer Bulletin*, 1-22.
13. Alanazi, Abdulaziz A., Fahad Abdulaziz, Mohammed Alyami, Satam Alotibi, Salah Sakka, Saida Abu Mallouh, **Rund Abu-Zurayk**, and Mazen Alshaaer. "The Effect of Full-Scale Exchange of Ca²⁺ with Zn²⁺ Ions on the Crystal Structure of Brushite and Its Phase Composition." *Biomimetics* 8, no. 4 (2023): 333.
14. Abu-Dalo, M. A., Bozeya, A., Sawalmeh, Z., Albiss, B., Alnairat, N., & **Abu-Zurayk, R. (2023).** Antifouling polymeric nanocomposite membrane based on interfacial polymerization of polyamide enhanced with green TiO₂ nanoparticles for water desalination. *PeerJ Analytical Chemistry*, 5, e26.
15. Bustanji, Y., Taneera, J., Semreen, M.H., Abu-Gharbieh, E., El-Huneidi, W., Faris, M.A.I.E., Alzoubi, K.H., Soares, N.C., Albustanji, B., Abuhelwa, A.Y. **and Abu-Zurayk, R., 2023.** Gold Nanoparticles and Breast Cancer: A bibliometric Analysis of the Current State of Research and Future Directions. *OpenNano*, p.100164..
16. **Abu-Zurayk, R.**, Alnairat, N., Khalaf, A., Ibrahim, A. A., & Halaweh, G. (2023). Cellulose acetate membranes: Fouling types and antifouling strategies—A brief review. *Processes*, 11(2), 489.
17. Al-Bataineh Q, Telfah M, **Abu-Zurayk R**, Benchaabane A, Tavares C, Telfah A, Nano-SnO₂/polyaniline composite films for surface plasmon resonance, *Materials Chemistry and Physics*, Volume 293, **2023**.
18. Al-Bataineh, Q. M., Telfah, A. D., Ahmad, A. A., Bani-Salameh, A. A., **Abu-Zurayk, R.**, & Hergenröder, R. E/Z reversible photoisomerization of methyl orange doped polyacrylic acid-based polyelectrolyte brush films. *Journal of Applied Polymer Science*, e53138. **2022**
19. Shibli, R., Mohusaien, R., **Abu-Zurayk, R.**, Qudah, T., & Tahtamouni, R. Silver Nanoparticles (Ag NPs) Boost Mitigation Powers of Chenopodium Quinoa (Q6 Line) Grown under In Vitro Salt-Stressing Conditions. *Water*, 14(19), 3099. **2022**.
20. Hudaib, B., **Abu-Zurayk, R.**, Waleed, H., & Ibrahim, A. A. Fabrication of a Novel (PVDF/MWCNT/Polypyrrole) Antifouling High Flux Ultrafiltration Membrane for Crude Oil Wastewater Treatment. *Membranes*, 12(8), 751. **2022**.
21. Fontananova, E., Tocci, E., **Abu-Zurayk, R.**, Grosso, V., Meringolo, C., Muzzi, C., ... & Di Profio, G.. An environmental-friendly electrostatically driven method for preparing graphene oxide composite membranes with amazing stability in aqueous solutions. *Journal of Membrane Science*, 655, 120587, **2022**.
22. Al-Qudah, T., Mahmood, S. H., **Abu-Zurayk, R.**, Shibli, R., Khalaf, A., Lambat, T. L., & Chaudhary, R. G.. Nanotechnology Applications in Plant Tissue Culture and Molecular Genetics: A Holistic Approach. *Current Nanoscience*, 18(4), 442-464, **2022**.
23. **Abu-Zurayk, R.**, Barboiu, M. D., Gotzias, A., Kouvelos, E., Mahmoudi, H., Roualdes, S., & Tocci, E.. Special issue on International Conference on Water and Energy (ICWE21) Hassiba Benbouali University of Chlef, Algeria on 25-27 May 2021 Foreword. *DESALINATION AND WATER TREATMENT*, 255, 1-3, **2022**
24. AL-Mohusaien, R. M., Shibli, R. A., **Abu-Zurayk, R. A.**, & Tahtamouni, R. . An Outlook on the Chenopodium Quinoa Willd (Quinoa) Plant and the Role of the in Vitro Culture and Nanotechnology in Mitigation of Salinity Stress: A Review. *Jordan Journal of Agricultural Sciences*, 18(1), 17-27. **2022**

25. Bozeya, A.; Makableh, Y.F.; **Abu-Zurayk, R.**; Khalaf, A.; Al Bawab, A. Thermal and Structural Properties of High Density Polyethylene/Carbon Nanotube Nanocomposites: A Comparison Study, *Chemosensors*, 9, 136, **2021**
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29. **Abu-Zurayk R**, Qtaishat MR, Al Bawab A, Desalination Membranes: Characterization Techniques, *Membrane Desalination*, 229-249, **2020**
30. **Abu-Zurayk R.**, Hamadneh I, Al Dujaili H, "Preparation and Characterization of Polyethylene/Cellulose Composite with Diatomite and Bentonite as Fillers", *Polymer-Plastics Technology and Materials*, 59(5): 546-554, **2020**
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32. Abbas HA, Nasr RA, **Abu-Zurayk R**, Al Bawab A, Jamil TS, "Decolourization of crystal violet using nano-sized novel fluorite structure $\text{Ga}_2\text{Zr}_2\text{-xW}_x\text{O}_7$ photocatalyst under visible light irradiation, *Royal Society open science* 7 (3), 191632, **2020**
33. Moqbel S, **Abu-Zurayk R**, Bozeya A, Alsisan R, Al Bawab A. Assessment of sustainable recycling at The University of Jordan. *International Journal of Sustainability in Higher Education*. **2020**.
34. Al Bawab A, Al-Hunaiti A, Abu Mallouh S, Bozeya A, **Abu-Zurayk R**, Hussein T. Contamination of plants, soil, and building stones at a Roman heritage archaeological site in an urban area. *Fresenius Environmental Bulletin*. **2020**.
35. Jaffal A , **Abu- Zurayk R** , Al-Hussein M., "Two-Step Approach Based on Solution Mixing and Hot Compaction for CNT/HDPE Nanocomposite Preparation", *Int. J. Electrochem. Sci.*, 14, 6489-6499, **2019**
36. Al Bawab A, Bozeya A, Abu-Mallouh S, Daqour I, **Abu-Zurayk R**, "The Dead Sea Mud and Salt: A Review of Its Characterization, Contaminants, and Beneficial Effects", *IOP Conference Series: Materials Science and Engineering* 305 (1), 012010, **2018**
37. Al Bawab A, Bozeya A, Abu-Mallouh S, Daqour I, **Abu-Zurayk R**, "The Dead Sea Mud and Salt: A Review of Its Characterization, Contaminants, and Beneficial Effects", *IOP Conference Series: Materials Science and Engineering* 92 (1), 012010, **2018**
38. Al Bawab A, Ghannam N, **Abu-Zurayk R**, Odeh F, Bozeya A, Abu Mallouh S, Al-Rawashdeh N, Abu-Dalo M, "Olive mill wastewater remediation by granular activated carbon impregnated with active materials", *Fresenius Environmental Bulletin* 27 (4), 2118-2126, **2018**

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41. **Abu-Zurayk R.**, Bozeya A., Abu-Irmaileha B., Abu-Mallouha S., Al-Bawab A., Al-Dujaili A., "Assessment of Some Heavy Metals in the Dead Sea Mud and Treatment Optimization", *Soil and Sediment Contamination An International Journal*, 26(4), 364-376, **2017**.
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43. **Abu-Zurayk R.**, "Interfacial interactions between polyethylene matrix and clay layers in polyethylene/clay nanocomposites", *IOP Conf. Series: Materials Science and Engineering* 92, **2015**.
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47. **Abu-Zurayk R.**, Harkin-Jones E, "The influence of processing route on the structuring and properties of HDPE/clay nanocomposites". *Polymer Engineering and Science* 52, 2360–2368, **2012**.
48. Shen Y, Harkin-Jones E, Hornsby P, McNally T, **Abu-Zurayk R.** "The effect of temperature and strain rate on the deformation behaviour, structure development and properties of biaxially stretched PET–clay nanocomposites" *Composites Science and Technology* 71, 758-764, **2011**.
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Polyethylene Terephthalate – Clay Nanocomposites”, PPS-26, Banff, Canada, 4-8 July **2010**.

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