Rula M. Allaf

Industrial Engineering Department
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Academic Qualifications

Ph.D. Industrial Engineering/Manufacturing, May 2011
Texas Tech University, Lubbock, Texas-USA
GPA: 4.0
Ph.D. Dissertation: "A Novel Approach to Fabricating Interconnected Porous PCL-based Biodegradable Scaffolds for Articular Cartilage Tissue Engineering"

M.Sc. Industrial Engineering/Management, February 2003
University of Jordan, Amman-Jordan
GPA: 3.95 (excellent)

B.Sc. Mechanical Engineering/Production, June 1997
Jordan University of Science and Technology, Irbid-Jordan
Cumulative average: 94% (outstanding)

IB International Baccalaureate Diploma, 1991
Amman Baccalaureate School, Amman-Jordan
Cumulative average: 39 out of 42

Professional Experience

Industrial Engineering Department, School of Applied Technical Sciences, German Jordanian University, Amman-Jordan
Vice Dean of School of Applied Technical Sciences, October 08, 2021 - October 08, 2022
Head of Industrial Engineering Department, July 11, 2019 – September 27, 2021
Associate Professor, Aug. 19, 2019 - present
Assistant Professor, Sep. 11, 2011 - Aug. 19, 2019
Teaching: Industrial Automation (IE 541), Materials Science (IE 221), Engineering Economy (IE 371), Engineering Workshop (IE121), Engineering Applied Statistics (IE 212), and Statistics and Engineering Economics (IE 517)

Industrial Engineering Department, Texas Tech University, Lubbock, Texas, USA
Teaching assistant for IE 3301: Engineering Economic Analysis, Sep. 01, 2010-May, 2011
Teaching assistant for IE 5356: Biomedical Design & Manufacturing, Jan. 16, 2010-May 31, 2010
Graduate part-time instructor for IE 3301: Engineering Economic Analysis, Sep. 01, 2009-Jan. 15, 2010
Research assistant working with a team on the NASA funded research project "Characterization of Single-Wall Carbon Nanotubes (SWNTs) for Structural Space Applications," Sep. 01, 2008-Aug. 31, 2009

Industrial Engineering Department, Auburn University, Auburn, Alabama, USA
Teaching assistant for ENGR 1110: Introduction to Industrial & Systems Engineering, Sep. 01, 2006 - Jan. 15, 2007

University of Jordan, Amman 11942 Jordan
Full time lecturer, teaching the following courses: metrology and engineering measurements and its

laboratory, manufacturing processes, project management, and ergonomics laboratory, Feb. 2004 - June 2006

Royal Scientific Society (RSS), Al-Jubaiha 11941 Jordan

Mechanical design engineer in the Mechanical Design and Technology Center and Internal quality auditor, Mar. 1998 - Feb. 2003

Engineer in the measurement and calibration laboratory, Mar. 2003 - Feb. 2004

Research Interests

Materials characterization and processing; study, development, characterization, fabrication, optimization and application of novel materials; porous materials; manufacturing process optimization.

Publications and Presentations

Books and Book Chapters

Allaf, Rula M., 2017, "Melt molding technologies for 3D scaffold engineering." In, Deng, Y. & Kuiper, J. (Eds.). Functional three-dimensional tissue engineering scaffolds: Technologies and applications. Woodhead Publishing / Elsevier. doi.org/10.1016/B978-0-08-100979-6.00004-5

Journal Publications

Allaf, Rula M., and Mohammad Futian. 2023. "Solid-state blending for the preparation of porous eco-friendly PCL membranes: Potential for filtration applications." *Journal of Plastic Film & Sheeting*, 39(4): 375-398. doi.org/10.1177/87560879231186427

Allaf, Rula M. and Futian Mohammad. 2020. "Solid-State Compounding for Recycling of Sawdust Waste into Green Packaging Composites." *Processes,* 8(11), p.1386. doi.org/10.3390/pr8111386

Allaf, R.M., Albarahmieh, E. and Futian, M., 2020. "Preparation of Sawdust-Filled Recycled-PET Composites via Solid-State Compounding." *Processes*, 8(11), p.100. doi.org/10.3390/pr8010100

Rula M. Allaf, Esra'a Albarahmieh, Baider M. AlHamarneh, 2019, "Solid-state compounding of immiscible PCL-PEO blend powders for molding processes." *Journal of the Mechanical Behavior of Biomedical Materials,* 97: 198–211, 2019. doi.org/10.1016/j.jmbbm.2019.05.023

Altarazi, S., Allaf, R. and Alhindawi, F., 2019, "Machine Learning Models for Predicting and Classifying the Tensile Strength of Polymeric Films Fabricated via Different Production Processes. " *Materials*, 12(9), p.1475. doi.org/10.3390/ma12091475

Allaf, Rula M., Iris V. Rivero, and Ilia N. Ivanov, 2017, "Fabrication and characterization of multiwalled carbon nanotube–loaded interconnected porous nanocomposite scaffolds." *International Journal of Polymeric Materials and Polymeric Biomaterials,* 66 (4): 183-192. doi.org/10.1080/00914037.2016.1201761

Altarazi Safwan A., Allaf, Rula M., 2017, "Designing and analyzing a mixture experiment to optimize the mixing proportions of polyvinyl chloride composites," *Journal of Applied Statistics*, 44(8): 1441-1465. doi.org/10.1080/02664763.2016.1214243

Anas M. Atieh, Rula M. Allaf, Abdulaziz AlHazaa, Mahmoud Barghash, Hasan Mubaydin, 2017 " Effect of Pre- and Post-Weld Shot Peening on the Mechanical & Tribological Properties of TIG Welded Al 6061-T6 Alloy, " *Transactions of the Canadian Society for Mechanical Engineering,* 41(2): 197-209. doi.org/10.1139/tcsme-2017-1014

Allaf, Rula M., Rivero, Iris V., Ivanov Ilia N., 2015, "Fabrication of co-continuous poly (ε-caprolactone)/polyglycolide blend scaffolds for tissue engineering." *Journal of Applied Polymer Science,* 132(35), (12pages). DOI: 10.1002/app.42471. doi.org/10.1002/app.42471

Allaf, Rula M., Hope-Weeks, Louisa J., 2014, "Synthesis of ZnO-CuO Composite Aerogels by the Sol−Gel Route," *Journal of Nanomaterials*, 2014, Article ID 491817, p. 160 (9 pages). dx.doi.org/10.1155/2014/491817

Allaf RM, Rivero IV, Abidi N, Ivanov IN., 2013, "Porous poly(ε-caprolactone) scaffolds for load-bearing tissue regeneration: solventless fabrication and characterization, " *Journal of Biomedical Materials Research Part B,* 101B(6): 1050-1060. doi.org/10.1002/jbm.b.32915

Allaf, Rula M. and Rivero, Iris V., 2011, "Fabrication and Characterization of Interconnected Porous Biodegradable Poly(ε-caprolactone) Load Bearing Scaffolds," *Journal of Materials Science: Materials in Medicine,* 22(8): 1843-1853. doi.org/10.1007/s10856-011-4367-7

Allaf, Rula M., Rivero, Iris V., Spearman, Shayla S., Hope-Weeks, Louisa J., 2011, "On the Preparation of As-Produced and Purified Single-Walled Carbon Nanotube Samples for Standardized X-ray Diffraction Characterization," *Materials Characterization*, 62(9): 857-864. doi.org/10.1016/j.matchar.2011.06.005

Peer-Reviewed Conference Proceedings

Anas M. Atieh, Rula M. Allaf, Mohammad Al Nawaiseh, Raya Alrahmani, et al., 2016 "Effect of Shot Peening on the Mechanical Properties & Weldability of TIG Welded Aluminum 6061-T6 Alloy, " *CSME International Congress*, June 26-29, 2016, Kelowna, BC, Canada.

Allaf, Rula M., AlSaka, Faris E., Abu Hanna, Sami F., Afghani, Bashar I., 2014, November, " Potential of Wood Sawdust Waste as Filler for Injection-Molded Polypropylene Products," *The 1st International Conference on Industrial, Systems and Manufacturing Engineering (ISME'14)*, Nov. 11-13, 2014, Amman, Jordan.

Allaf, Rula M. and Rivero, Iris V., 2011, "Solid-state Cryomilling for Porogen Mixing and Porous Scaffold Fabrication," 48th Annual Rocky Mountain Bioengineering Symposium & 48th International ISA Biomedical Sciences Instrumentation Symposium, April 15-17, 2011, Denver, Colorado, USA. Biomedical sciences instrumentation 47 (2011): 258-263.

Allaf, Rula; Swain, Shayla; Rivero, Iris V., 2010, June, "Thermal Behavior of Raw and Purified SWNT Samples: XRD Studies," Industrial Engineering Research Conference**,** IIE, June 5-9, 2010, Cancun, Mexico. CD-ROM Proceedings.

Peer-Reviewed Conference Presentations

E. Albarahmieh, R. Allaf and B.Alkhalidi, 2020, "A Systematic Study Of Developing Hot Melt Extruded Buccal Films For Potential Taste Masking Of Guaifenesin With Two Grades Of Eudragit Polymers, " Controlled Release Society Virtual Annual Meeting 2020 (CRS 2020), USA, June-July 2020. On-Demand Talk presentation based on a highly-scored poster-Oral Delivery (OrD) Focus Group.

Swain, Shayla; Rivero, Iris V.; Harrysson, Ola L.A.; and Allaf, Rula, 2010, June, "Fabrication of Electrospun Biopolymer/SWNT Fibers for Bone Plates Applications," Industrial Engineering Research Conference**,** IIE, June 5-9, 2010, Cancun, Mexico.

Funded Research and Graduation Projects

"A mixture design to study the properties of porous sheets prepared via a cryomilling approach with two types of porogens." Funded by Deanship of Graduate Studies & Scientific Research, December 2022-July 2023.

"Preparation of porous composite sheets via a cryomilling approach: utilization of an antibacterial filler, a reinforcement filler, and a reinforcement woven fabric substrate." Funded by Deanship of Graduate Studies & Scientific Research, December 2022-July 2023.

"Recycling of PET Bottles and Wood Dust Waste into Wood Plastic Composites via a Solid State Compounding Route." Funded by Deanship of Graduate Studies & Scientific Research, October 2017-February 2019.

"Development of eco-efficient porous filters and membranes via a novel hybrid milling-molding process for potential water purification application." Funded by Deanship of Graduate Studies & Scientific Research, May 2015-February 2018.

"Characterization of Single-Wall Carbon Nanotubes (SWNTs) for Structural Space Applications." Funded by NASA, September 2008 - October 2009

Skills

Material characterization including: Electron microscopy (SEM, TEM), X-ray diffraction, Tensile Testing, hydrophilicity.
Origin data analysis and graphing software, SIMAGIS image analysis software, Microsoft Office (Word, Excel, PowerPoint)
Statistical analysis and process optimization
Programmable Logic Control using SIMATIC step 7.

Training & Projects

German-Iranian-Jordanian cooperation to improve the connection of the technical universities with the industry (CICTI), Schwenningen-Germany, 2015-2017
Mobility within Tempus IV European project "Middle Eastern Partnership in Sustainable Engineering," Ljubljana-Slovenia, 10-22 June, 2014
30-hour Occupational Safety and Health Training course in General Industry Safety & Health, OSHA, US department of Labor, May 2006
ISO 9001:2000 Appreciation and Interpretation, LLOYD'S, June 2003
Quality Charts, Royal Scientific Society, April 2002
Internal Quality Auditing, LLOYD'S, June 1999
Die Design & Manufacturing, Royal Scientific Society in cooperation with National Taiwan University, June 1998

Memberships and Honors

Ranked the First of the 1997 JUST Mechanical Engineering Graduates with Honor Degree
Jordan Engineers Association, since 1997
Golden Key International Honor Society, since 2007
Phi Kappa Phi, honor society, 2008
Foreign Fulbright Student Grantee, 2006-2008
Fulbright Alumni, since 2008