

## BEHNAZ HASSANPOUR, PhD

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### PROFESSIONAL SUMMARY

A skilled, proficient engineer with degrees in Civil and Mechanical Engineering, specializing in advanced composite materials. Expertise in composite materials, additive manufacturing, and materials characterization. Proven skills in conducting research, developing models, and analyzing complex material behaviors for various engineering applications.

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### EDUCATION

<b>PhD in Civil Engineering, University of Texas at Arlington,</b>	May 2020 - Summer 2024
Dissertation Thesis: "Hygrothermal Exposure Based Moisture and Glass Transition Temperature Kinetics of Carbon/Epoxy Composites"	
<b>Master of Science in Mechanical Engineering, University of Texas at Arlington,</b>	Aug 2018 - May 2020
Thesis: "Investigation of Microstructure and Viscoelastic Properties of SLM IN718 Following Different Heat Treatment"	
<b>Bachelor of Physics Engineering- Laser and Optics, University of Abadeh</b>	Aug 2009 - May 2013

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### RELEVANT PROJECTS AND WORK EXPERIENCE

#### Durability of Composite Materials

- Conducted comprehensive research on long-term hygrothermal aging of composites, with a focus on moisture uptake kinetics and its impact on glass transition temperature
- Developed and validated an innovative two-stage model for moisture uptake in composites, enabling accurate prediction of long-term performance
- Analyzed effects of varying environmental conditions on durability and mechanical properties of ambient-cured composites
- Investigated relationship between moisture uptake, glass transition temperature, and mechanical properties

#### Additive Manufacturing

- Conducted Research using EOS M219 Machine
- Designed experiment to optimize process parameters for nickel superalloys and Inconel 718
- Optimized post-process heat treatments on additively manufactured parts
- Characterized dynamic viscoelasticity, phase transformation, damping properties, and creep recovery of specimens fabricated by metal additive 3D printer

#### Material Characterization

- Utilized SEM, EDS, XRD, Thermal Analysis, Tensile Test, DMA, and TMA to understand material properties and behavior
- Analyzed microstructure of fabricated parts, material composition, and phase analysis using X-ray diffraction
- Prepared samples including grinding, polishing, and etching using mechanical and electrochemical polishing systems

#### Forensic Analysis of Concrete and Asphalt

- Performed comprehensive SEM/EDX and FTIR analysis to assess chemical and physical properties of concrete and asphalt layers, focusing on effects of aging and material deterioration
- Conducted in-depth field evaluations of concrete pavements as part of a Texas Department of Transportation (TxDOT) project, contributing to assessment and prediction of pavement durability

#### Fiber Reinforced Concrete for Pavements

- Contributed to service life prediction of TxDOT pavement
- Analyzed effects of fiber reinforcement on concrete pavement performance and durability

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### Teaching Experience

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|--|-------------------------|
| • Mechanics of Materials [CE-2331]                     | Spring 2022 & Fall 2022 |
| • Thermal Engineering [MAE-3309]                       | Spring 2021 & Fall 2021 |
| • Prep Course for Aerospace Engineering [AE-5300]      | Fall 2021               |
| • Introduction to Manufacturing Engineering [MAE-3344] | Summer 2021             |
| • Thermodynamics [MAE-3310]                            | Fall 2020               |

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### AWARD, FELLOWSHIPS, & GRANTS

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|---|---------------------------|
| • Graduate School Dissertation Fellowship                                   | Summer 2024               |
| • Civil & Environmental Engineering STEM Doctoral Fellowship                | Spring 2022 – Spring 2024 |
| • DDOC COE Civil Engineering  | Fall 2022 – Spring 2023   |
| • Civil Engineering Scholarship   | Fall 2022 – Spring 2023   |
| • Civ & Env Eng DACA Schol  | Fall 2022 – Spring 2023   |
| • DDDA MAE Scholarship  | Fall 2020 – Fall 2021     |
| • MAE A. Haji-Sheikh Scholarship  | Fall 2020 – Spring 2021   |
| • DDOC COE Mech & Aerospace Engineering                                     | Fall 2020 – Fall 2021     |
| • Mech & Aerospace Engr STEM Fellowship                                     | Fall 2020 – Spring 2021   |
| • Mechanical Dept. Chair Graduate Assistantship                             | Aug 2019 – May 2020       |
| • Receiving CoE Research Experiences for Undergraduates (REU) Program award | Aug 2019 – May 2020       |
| • UTARI STEM Doc Fellowship   | Fall 2018 – Summer 2019   |

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### MEMBERSHIP & ACTIVITIES

- American Society Civil Engineers (ASCE)
- Society of Women Engineers (SWE) & Monitoring Officer in Conference
- National Society of Black Engineers (NSBE),
- Member of college panel (Digital Divas 2020) participated on a college panel at Digital Divas 2020, an event that introduces girls to engineering and promotes the presence of women in STEM, to share advises on college and what it means to become an engineer

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### PUBLICATIONS

- Hassanpour B, Karbhari VM. Characteristics and models of moisture uptake in Fiber-Reinforced Composites: A Topical Review. Polymers. 2024, 16(16), 2265. <https://doi.org/10.3390/polym16162265>.
- Hassanpour B, Karbhari VM. Glass transition temperature as a characteristic of the durability of fiber-reinforced polymer composites. In Aging and Durability of FRP Composites and Nanocomposites. Uthaman A, Thomas S, Mayookh Lal H, Eds. Woodhead Publishing, Elsevier, London, UK. 2024. Chapter 15, 341-362. <https://www.sciencedirect.com/science/article/pii/B9780443155451000020>.
- Hassanpour B, Karbhari VM. Moisture and glass transition temperature kinetics of ambient-cured Carbon/Epoxy composites. Journal of Composites Science, 2023, 7(11), 447. <https://doi.org/10.3390/jcs7110447>
- Karbhari VM, Hassanpour B. Water, saltwater, and concrete leachate solution effects on durability of ambient-temperature cure carbon-epoxy composites. Journal of Applied Polymer Science. 2022, 139(27), e52496. <https://doi.org/10.1002/app.52496>