Western Engineering

DATA-TO-MANUFACTURING LABORATORY

Ph.D. Position Openings

Functional Materials for Hierarchical Manufacturing at Western University

We are looking for highly motivated Ph.D. students to join the **Data-Driven Advanced Manufacturing (D2M) Group** in the Department of Mechanical and Materials Engineering (MME) at Western University. Our group aims to design the next generation of sustainable, functional materials for additive hierarchical manufacturing across multiple length scales. By combining materials science fundamentals and mechanical design principles, improved materials properties along with optimal hierarchical manufacturing parameters can be revealed for enhanced device performance in the following application areas:

- Energy Storage (Wearable Supercapacitors and Zn-ion Batteries)
- Wearable Sensors (Tactile, Strain, Biomarkers, Microfluidics, etc.)

This proposed research project is situated at the intersection of advanced manufacturing and material informatics. Hidden relationships between device performance and manufacturing parameters can be revealed, and further predictions of functional material quality and performance can be made. The ideal candidates should have completed their master's degrees in the following disciplines: Mechanical Engineering, Materials Science and Engineering, Chemical Engineering, Engineering Science, Chemistry, or Physics. They should also possess a strong combination of theoretical and experimental skills in mechanical and materials engineering.

Additionally, the successful candidate should have:

- Interest in interdisciplinary research spanning engineering and biomedical technologies
- Ability to work collaboratively across research groups and shared facilities
- Strong written and oral communication skills
- Motivation to translate fundamental research into practical and scalable technologies

Research activities may include:

- Design, fabrication, and testing of functional devices
- Development of microfluidic architectures for various healthcare applications
- Micro/nanoscale 3D fabrication and bioprinting
- Development and characterization of functional materials and polymers
- Microfabrication, molding, imprinting, and replication processes
- Optical, mechanical, material, and fluidic characterization and modeling
- Preparation of scientific publications, conference presentations, and IP disclosures

About Us

Prof. HaoTian Harvey Shi is an Assistant Professor and the Director of the Data-to-Manufacturing (D2M) lab in the Department of Mechanical & Materials Engineering at Western University, Ontario, Canada. His research focuses on developing the next generation of functional materials using additive hierarchical manufacturing across multiple length scales. Dr. Shi received his PhD in Mechanical Engineering from the University of Toronto, Canada, as part of the Toronto Institute for Advanced Manufacturing, where he worked on flexible, wearable electrodes for

electrochemical energy storage devices. He was a postdoctoral research associate at the University of Cambridge, U.K., with a focus on biosensors and biocompatible functional structures across multiple length scales. He has contributed to several high-impact journals, including *Nature Materials, Advanced Materials, Advanced Energy Materials, Advanced Functional Materials, Chemical Engineering Journal, ACS Applied Materials & Interfaces,* among others. Dr. Shi serves on the Early Career Editorial Board for *ACS Applied Materials & Interfaces*, and he is the Associate Editor of the journal *Transactions of the Canadian Society for Mechanical Engineering (CSME)*. Dr. Shi was awarded the Western Engineering Junior Faculty Award for Excellence in Research in 2025-2026.

How to Apply

If interested, please email Dr. HaoTian Harvey Shi (Harvey.shi@uwo.ca) with the following information. Applications will be considered for May or September 2027 admission. Further application instructions can be found at https://www.eng.uwo.ca/mechanical/. Please apply before Nov. 30th, 2026.

- Academic CV
- A brief description of your expertise and research interests
- Transcripts (non-official)
- Contact information for academic or research references
- Examples of relevant publications

About Western University

Situated along the banks of the Thames River in picturesque London, Ontario, Canada, a city with a population of approximately 350,000, Western University is a prominent academic institution routinely ranked as a top research-intensive university in Canada and is committed to excelling as a leading research institution internationally (2027 QS #142 globally and #6 in Canada). Western University has a full-time enrollment of about 32,000 students in a range of academic and professional programs. Western University is committed to creating an inclusive and supportive research environment and welcomes applications from qualified candidates from diverse backgrounds.