Mohammad Reza Daneshvar Garmroodi

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MRDanesh.github.io

EDUCATION

Concordia University, Montreal, Canada *Sep 2019 - May 2025*
Ph.D. in Mechanical Engineering

Amirkabir University of Technology, Tehran, Iran *Sep 2017 - Aug 2019*
MSc in Mechanical Engineering

University of Tabriz, Tabriz, Iran *Sep 2013 - Aug 2017*
BSc in Mechanical Engineering

PROFESSIONAL EXPERIENCE

Postdoctoral Researcher, Montreal, Canada *May 2025 - present*

- Jet mixing and turbulent non-Newtonian flows, in collaboration with *SINTEF*
- Thermal convection in Micro-encapsulated PCM suspensions, in collaboration with *Universit de Lorraine*

PEER-REVIEWED PUBLICATIONS

M.M. Nasiri, **M.R. Daneshvar Garmroodi** and M. Tembely. Experimental study on elasto-capillary dynamics of a viscoelastic hallow droplet, *Under Preparation*.

M.R. Daneshvar Garmroodi and I. Karimfazli. Two-dimensional mixing stirred system, mixing regimes and transitions. *Under Preparation*.

M.R. Daneshvar Garmroodi and I. Karimfazli. Yield-Stress Fluid Mixing: Localization Mechanisms and Regime Transitions. *Under Review with positive feedback, Journal of Fluid Mechanics.*

M.R. Daneshvar Garmroodi and I. Karimfazli. Mixing in heterogeneous fluids: An examination of fluid property variations. *Journal of Non-Newtonian Fluid Mechanics, 325, p.105196, 2024*

M.R. Daneshvar Garmroodi and A. Ahmadpour. Numerical simulation of stratified waxy crude oil and water flows across horizontal pipes in the presence of wall heating. *Journal of Petroleum Science and Engineering, 193:107458, 2020*

M.R. Daneshvar Garmroodi and A. Ahmadpour. A numerical study on two-phase core-annular flows of waxy crude oil/water in inclined pipes. *Chemical Engineering Research and Design, 159:362 376, 2020*.

M.R. Daneshvar Garmroodi, A. Ahmadpour, and F. Talati. MHD mixed convection of nanofluids in the presence of multiple rotating cylinders in different configurations: a two-phase numerical study. *International Journal of Mechanical Sciences, 150:247 264, 2019*

M.R. Daneshvar Garmroodi, A. Ahmadpour, M. R. Hajmohammadi, and S. Gholamrezaie. Natural convection of a non-Newtonian ferrofluid in a porous elliptical enclosure in the presence of a non-uniform magnetic field. *Journal of Thermal Analysis and Calorimetry, 1-17, 2019*

CONTRIBUTED TALKS

M.R. Daneshvar Garmroodi and I. Karimfazli, Mixing Yield-Stress Fluids: Localization Mechanisms and Regime Transitions, *Second European Fluid Dynamics Conference*, Dublin, Ireland, August 2025.

M.R. Daneshvar Garmroodi and I. Karimfazli, Fluid mechanics of mixing in a two-dimensional stirred: regimes and mechanisms, *The Canadian Society for Mechanical Engineering International Congress*, Montreal, Canada, May 2025.

M.R. Daneshvar Garmroodi and I. Karimfazli, Scalar mixing in viscoplastic fluids, *26th International Conference of the Theoretical and Applied Mechanics*, Daegu, Republic of Korea, August 2024.

M.R. Daneshvar Garmroodi and I. Karimfazli, Understanding Mixing Dynamics in Yield Stress Fluids, *The Canadian Society for Mechanical Engineering International Congress*, Toronto, Canada, May 2024.

M.R. Daneshvar Garmroodi and I. Karimfazli, Scalar mixing in viscoplastic fluids, *The annual European rheology conference*, Leeds, United Kingdom, April 2024.

M.R. Daneshvar Garmroodi and I. Karimfazli, Localization of stirring flows: the effect of the yield stress, *8th PACIFIC RIM conference on rheology*, Vancouver, Canada, May 2023.

M.R. Daneshvar Garmroodi and I. Karimfazli, Chaotic mixing of complex fluids: on the effects of viscosity ratio, *The Canadian Society for Mechanical Engineering International Congress*, Edmonton, Canada, May 2022.
M.R. Daneshvar Garmroodi and I. Karimfazli, Mixing of heterogeneous fluids: buoyancy effects, *The annual European rheology conference*, Seville, Spain, April 2022.
M.R. Daneshvar Garmroodi and I. Karimfazli, Mixing of complex fluids: on the effects of inhomogeneity. *The Canadian Society for Mechanical Engineering International Congress*, May 2021.

HONORS & AWARDS

Graduate Fellowship for Ph.D. program in Mechanical Engineering, Concordia University. Fall 2019
Four years, Monetary value: 37,915 CAD
Graduate Fellowship for Ph.D. program in Marine Engineering, NTNU University. Fall 2019
three years, Monetary value 479,600 NOK (approximately 70,000 CAD per year), declined.
Graduate Fellowship for Ph.D. program in Mechanical Engineering, Ghent University. Fall 2019
three years, Monetary value 30,000 Euro per year, declined.
Ranked 1st Among 60 Mechanical Engineering Master students of Amirkabir University. Spring 2019
four years, Monetary value: 300,000,000 Rial (approximately 7,000 CAD per year), declined.
Accepted in the First Stage of the National Computer and Mathematical Olympiads. Fall 2010, 2011, 2012

TEACHING

Instructor, SuperKids, Montreal, Canada *2024-present*
Teaching linear algebra and calculus to high school and collage students

Teaching assistant, Concordia University, Montreal, Canada *2019-2025*
Applied Advanced Calculus, Partial Differential Equations, Ordinary Differencial Equations, Fluid Mechanics I, Fluid Mechanics II, Heat Transfer I, Heat Transfer II, Thermodynamics I

Teaching assistant, Amirkabir University of Technology, Tehran, Iran *2017-2019*
Fluid Mechanics, Heat Transfer I, Non-Newtonian Fluid Mechanics, Continuum Mechanics

SELECTED PROJECTS

• Numerical simulation of the impact of a hallow viscoelastic droplet on a wetting surface using Basilisk.
During PhD Program
• Adding dynamic mesh and tracking passive particles in the twoLiquidMixingFoam solver in OpenFOAM
During PhD Program
• Developing a melting solver in OpenFOAM Based on phase field and enthalpy methods
During PhD Program
• Coding annular flow of a Newtonian fluid by finite volume SIMPLE method in MATLAB
Advance Computational Fluid Mechanics Course
• Coding mixed convection in a lid-driven cavity using streamfunction-vorticity by finite difference method
Advance Computational Fluid Mechanics Course
• A priory and A Posteriori tests using dynamic Smagorinsky, and Wong LES Models one the filtered Burgers equation by finite Difference Method
Large Eddy Simulation Course
• Coupling Level-Set method with VOF algorithm in OpenFOAM
Multiphase Flows Course