Palas Kumar Farsoiya

Assistant Professor | Chemical Engineering | IIT Roorkee

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EXPERIENCE

IIT Roorkee	Feb 2024–Present
Assistant Professor	Roorkee, UK, India
Princeton University	May 2020–Feb 2024
Postdoctoral Research Associate, Advisor: Prof. Luc Deike	Princeton, N.I. USA

- Applied multiphysics modeling for Direct Numerical Simulations (DNS) of gas transfer, phase change, evaporation and Marangoni flows. Collabortations : Prof. Howard Stone, Prof. Stéphane Popinet
- Applied mathematical modeling to predict gas transfer and dissolution from bubbles in the turbulent flow.
- Led a collaborative project with BASF Germany modeling viscous droplet turbulent breakup in polymerization.
- Mentored graduate students engaged in Computational Fluid Dynamics (CFD) projects focused on multiphase flows.

Indian Institute of Technology, Bombay	July 2014–Jan 2020
Graduate Research Assistant, Advisor: Prof. Ratul Dasgupta	Mumbai, India

• Developed multi-phase Navier-Stokes equation solver based on Volume of Fluid method.

- Stability analysis of free and forced waves.
- Taught Engineering Mathematics and Computational Fluid Dynamics

EDUCATION

Ph.D. , Chemical Engineering, <i>Indian Institute of Technology, Bombay, India</i> Thesis: "Free and forced linearised interfacial waves"	2020
M.Tech. , Chemical Engineering, <i>Indian Institute of Technology (BHU), India</i> Dissertation: "Development of photoanode for the splitting of water"	2014
B.E., Chemical Engineering, Panjab University, Chandigarh, India	2011

AWARDS

- Milton van Dyke award for poster at Gallery of Fluid Motion, APS-DFD, 2021, Phoenix, AZ, USA
- Best Poster (Faraday waves on cylindrical fluid filament) Award Research Scholar's Symposium 2019 at IIT Bombay, Mumbai
- Best Presentation (Azimuthal waves on cylindrical fluid filament) Award Research Scholar's Symposium 2019 at IIT Bombay, Mumbai

REFEREED JOURNAL PUBLICATIONS

- 10. Palas Kumar Farsoiya, Stéphane Popinet, Howard A. Stone, Luc Deike, A coupled Volume of Fluid Phase Field method for direct numerical simulation of insoluble surfactant-laden interfacial flows and application to rising bubbles, Submitted
- 9. Palas Kumar Farsoiya, Zehua Liu, Andreas Daiss, Rodney O. Fox, Luc Deike, Role of viscosity in turbulent drop break-up, J. Fluid Mech. (2023), vol 972, A11
- Palas Kumar Farsoiya, Quentin Magdelaine, Arnaud Antkowiak, Stéphane Popinet, Luc Deike, Direct numerical simulations of bubble-mediated gas transfer and dissolution in the quiescent and turbulent flow, J. Fluid Mech. (2023), vol 954, pp. A29
- 7. Palas Kumar Farsoiya, Stéphane Popinet, Luc Deike, Direct numerical simulations of dilute gas transfer by breaking waves, Physical Review Fluids (2022), vol 7 (11), pp. 110506
- 6. Palas Kumar Farsoiya, Stéphane Popinet, Luc Deike, Bubble mediated gas transfer of dilute gas in turbulence, J. Fluid Mech. (2021), vol 920, pp. A34

- 5. Palas Kumar Farsoiya and Ratul Dasgupta, Jetting in finite-amplitude, free, capillary-gravity waves, Saswata Basak, J. Fluid Mech., (2021) vol 909, pp.A3.
- 4. Palas Kumar Farsoiya, Anubhab Roy and Ratul Dasgupta, Azimuthal capillary waves on a hollow filament-discrete and the continuous spectrum, J. Fluid Mech., (2019) vol 883, pp.A21.
- 3. Palas Kumar Farsoiya, Ratul Dasgupta, Test cases for comparison of two interfacial solvers, Manpreet Singh, International. J. Multiphase Flow, (2019) vol 115, pp. 75-92.
- 2. Sagar Patankar, Palas Kumar Farsoiya and Ratul Dasgupta, Faraday waves on a cylindrical fluid filament generalized equation and simulations, J. Fluid Mech., (2018) vol 857, pp.80-110.
- 1. Palas Kumar Farsoiya, Y.S. Mayya and Ratul Dasgupta, Axisymmetric viscous interfacial oscillations- theory and simulations, J. Fluid Mech. (2017) vol. 826, pp.797-818.

CONFERENCE PRESENTATIONS

- Palas Kumar Farsoiya, Stéphane Popinet, Howard Stone, Luc Deike, Direct Numerical Simulations of surfactant transport and Marangoni forces at the interface between two fluids, 76th Meeting of American Physical Society
 Division of Fluid Mechanics, Washington DC, USA, 2023
- Palas Kumar Farsoiya, Quentin Magdelaine, Arnaud Antkowiak, Stéphane Popinet, Luc Deike, Direct numerical simulations of bubble-mediated gas transfer and dissolution in the quiescent and turbulent flow, 75th Meeting of American Physical Society - Division of Fluid Mechanics, Indianapolis, USA, 2022
- 8. Palas Kumar Farsoiya, Stéphane Popinet, and Luc Deike, Direct modeling of bubbles mediated gas transfer from breaking waves, Ocean Sciences Meeting, Honolulu, USA, 2022
- Palas Kumar Farsoiya, Stéphane Popinet, and Luc Deike, Bubble-mediated gas transfer of dilute gas in homogeneous and isotropic turbulent flow, 74th Meeting of American Physical Society - Division of Fluid Mechanics, Phoenix, USA, 2021
- Palas Kumar Farsoiya, Sagar Patankar, Anubhab Roy and Ratul Dasgupta, Video entry Gallery of Fluid Motion, Jets formed from flow through non-circular orifice, 72th Meeting of American Physical Society - Division of Fluid Mechanics, Seattle, USA, 2019
- 5. Palas Kumar Farsoiya and Ratul Dasgupta, Azimuthal free oscillations of viscous cylindrical filament, 12th European Fluid Mechanics Conference (EFMC - 12), Vienna, Austria, 2018
- Palas Kumar Farsoiya and Ratul Dasgupta, Axisymmetric capillary-gravity waves at the interface of two viscous, immiscible fluids-Initial value problem, 70th Meeting of American Physical Society - Division of Fluid Mechanics, Denver, USA, 2017
- Palas Kumar Farsoiya and Ratul Dasgupta, Video entry in Gallery of Fluid Motion, Viscous interfacial waves oscillations, jetting and breakup, 70th Meeting of American Physical Society - Division of Fluid Mechanics, Denver, USA, 2017
- Palas Kumar Farsoiya and Ratul Dasgupta, Axisymmetric viscous interfacial waves, , Basilsik/Gerris Users' Meeting, Princeton University, Princeton, USA, 2017
- 1. Palas Kumar Farsoiya and Ratul Dasgupta, Viscous Standing Capillary Waves Linear and Nonlinear Regime, 6th International Conference on Fluid Mechanics and Fluid Power, MNIT Allahabad, 2016

PROFESSIONAL ACTIVITY

Reviewer	
 J.Fluid Mech 	Feb 2024 - Present
 AIChE Journal 	Apr 2022 - Present
Memberships	
 American Physical Society 	2019-Present
Service	
 Session Chair - Interfacial Flows - APS-DFD Washinghton D.C. 	Nov 2023