

Contact Line Dynamics and Droplet Spreading

Guest Editors

Alireza Mohammad Karim

Koji Hasegawa

Maurizio Santini



Basel • Beijing • Wuhan • Barcelona • Belgrade • Novi Sad • Cluj • Manchester

Guest Editors

Alireza Mohammad Karim
Department of Engineering
University of Cambridge
Cambridge
United Kingdom

Koji Hasegawa
Department of Mechanical
Engineering
Kogakuin University of
Technology & Engineering
Tokyo
Japan

Maurizio Santini
Department of Engineering
and Applied Sciences
University of Bergamo
Dalmine
Italy

Editorial Office

MDPI AG
Grosspeteranlage 5
4052 Basel, Switzerland

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About the Editors

Alireza Mohammad Karim

Alireza Mohammad Karim is a postdoctoral fellow in Pediatric Cardiology in the Department of Pediatrics in the Division of Cardiology at the Children’s Hospital of Philadelphia. He has a Bachelor of Science in Mechanical Engineering from UCLA with the highest honor distinction (summa cum laude) alongside the honor of being the recipient of the Boeing Outstanding Undergraduate Student Award. He has two PhDs. He has obtained a PhD in Aerospace Engineering with a specialization in fluid mechanics and a minor in applied mathematics from UCLA and a PhD in Engineering with a specialization in nanotherapeutics from the University of Cambridge as a Cambridge Trust Scholar. He was named the Featured Researcher in the Collaborative Center for Aerospace Sciences in the Department of Mechanical and Aerospace Engineering at UCLA. He has earned two Master of Science degrees. He has a Master of Science in Aerospace Engineering from Caltech with the Space Fellowship Award from the Jet Propulsion Laboratory (JPL) in NASA, and a Master of Science in Mechanical Engineering from UCLA. He is the author/co-author of over 30 scientific publications. His research centers in microfluidics, nanotherapeutics, and heart valve disease. He has served as the Lead Guest Editor for Special Issues of the journals *Fluids* and *Micromachines*. He has also served as the Lead Guest Editor for a Special Collection of the journal *Advances in Mechanical Engineering*. He has been a member of the Topical Advisory Panel of the journal *Micromachines* since 2022, the Section Topical Advisory Panel Member of Non-Newtonian and Complex Fluids of the journal *Fluids* since 2023, and the Section Topical Advisory Panel Member of Nanotechnology Applications in Bioengineering of the journal *Bioengineering* since 2024.

Koji Hasegawa

Koji Hasegawa is an Associate Professor at Kogakuin University of Technology & Engineering, Japan. He earned his Ph.D. in Engineering from the University of Tsukuba in 2013, specializing in multiphase flow. From 2024 to 2025, he served as a visiting researcher at the University of Stuttgart, Germany. His research focuses on droplet dynamics, encompassing interfacial transport phenomena, wetting, spreading, and phase-change processes such as evaporation and freezing. A distinctive aspect of his work is the use of advanced optical diagnostics, including high-speed imaging and infrared thermography, to investigate multiphase flow phenomena. Dr. Hasegawa has received numerous honors, including the Young Scientists’ Award from Japan’s Ministry of Education, Culture, Sports, Science and Technology, as well as awards from the Japan Society of Mechanical Engineers (JSME), the Japanese Society for Multiphase Flow (JSMF), and the Japan Society of Microgravity Application (JASMA).

Maurizio Santini

Maurizio Santini is a full professor of technical physics (thermodynamic, heat and mass transfer, applied acoustic) at the University of Bergamo (Italy). His primary research interests include atomization processes (droplet impact on dry walls, liquid films and pools); liquid/solid interfaces (contact lines) and the characterization of porous media and transport phenomena in biological materials. His various research activities are predominantly experimental, particularly in the application and development of multispectral techniques for the characterization of multiphase flows at the microscale (optical microscopy, phase-Doppler anemometry, X-ray micro-tomography including phase-contrast and photon counting techniques).

Preface

Contact line appears once a liquid–air interface is in contact with a solid surface and involves interfacial physics and fluid mechanics. A moving contact line and droplet spreading have important roles in a broad spectrum of technologies including healthcare, electronics, and energy. This Special Issue Reprint provides advances in moving contact lines and droplet impact and explores their applications in biotechnology, microfluidics, nanofluidics, printings/coatings, and heat transfer.

Alireza Mohammad Karim, Koji Hasegawa, and Maurizio Santini
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