PREFACE: MULTIPHASE FLOWS

The International Conference on Multiphase Flow (ICMF) has been playing a crucial role in the progress of multiphase flow research and development. The first ICMF was held in Tsukuba, Japan, in 1991. The conference series has been held every three years in the three geographical regions in the order of Europe, America, and Asia-Oceania, and the 11th edition of ICMF, the 11th International Conference on Multiphase Flow (ICMF-2023), was successfully held in Kobe, Japan, during April 2 to 7, 2023. Over 600 oral and 50 poster presentations were given at the conference and about 800 people participated in the conference from all over the world.

One of the reasons why ICMF has been attracting multiphase flow researchers is because of the high-quality research presentations. It is worth collecting the high-quality research presented at the conference and binding them as a special issue. Therefore, we decided to launch the special issue for ICMF-2023 in Multiphase Science and Technology. The papers submitted to the ICMF special issue went through the peer-review process and, as a result of the screening process, the special issue brings 16 papers to the readers of MST. The topics are as follows:

- Cavitating flow
  - Dynamical threshold of cavitation due to weak tension induced by water flow
  - Cavitation cloud formation by high-intensity focused ultrasound (HIFU)
  - Numerical simulations of bubble cloud formation due to HIFU
  - Two-phase flows in microscale or under microgravity
  - Non-Newtonian two-phase flows in a microchannel
  - Observation and modeling of a capillary-driven flow under microgravity
- Measurement techniques
  - Novel technique for the flow rates of gas-liquid two-phase flows
  - Investigation of two-phase turbulent wake using PIV
  - Effects of interface curvature on velocity fields obtained by PIV
  - Visualization and flow pattern classification of flows in a pulsating heat pipe
- Industrial applications/two-phase flow modeling
  - Two-phase flows in hilly-terrain pipelines
  - Experimental study on a gas–liquid–solid three-phase flow for subsea resource productions
  - One-dimensional modeling of two-phase flow thermosiphon
  - Threshold for the onset of chaotic sloshing mode
- CFD techniques
  - Assessment of combined CFD techniques for a bearing chamber
  - CFD-PBE (population balance equation) approach for flows in a stirred tank

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– Impact of a gas jet on a water free surface

We are very happy to release this special issue to share the state-of-the-art multiphase flow research with the multiphase flow research community through Multiphase Science and Technology, which has been one of the most important hubs for knowledge exchange between multiphase flow researchers.

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