

Editorial: Introduction to the 41st Annual Gallery of Fluid Motion (Washington, DC, USA 2023)

Rui Ni

Department of Mechanical Engineering, The Johns Hopkins University, Baltimore, MD 21218, USA

Kartik V. Bulusu

*Department of Mechanical and Aerospace Engineering,
The George Washington University, Washington, DC 20052, USA*

Azar Panah

*Gallery of Fluid Motion Coordinator, Department of Mechanical and Aerospace Engineering,
The George Washington University, Washington, DC 20052, USA*



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The 76th Annual Meeting of the American Physical Society (APS) – Division of Fluid Dynamics (DFD) took place in Washington DC from November 19–21, 2023. The Gallery of Fluid Motion (GFM), which merges the art and science of liquids and gases in motion, featured video and poster submissions from conference attendees. This year, a single deadline was set for both the intent to submit and file uploads, with a final submission date of September 15, 2023, earlier than in previous years. Despite this change, there was an increase in total submissions, with 81 videos and 59 posters. Notably, poster submissions saw an approximate 80% increase. A collage of winning entries from the 41st Annual GFM is shown in Fig. 1. The entries are also available online on the 2023 GFM website (<https://gfm.aps.org/meetings/dfd-2023>).

A panel of fourteen experts in experimental and computational fluid dynamics was assembled to evaluate the submissions, with eleven assigned to judge the videos and three to assess the posters. The submissions were considered for both the Milton Van Dyke and Gallery of Fluid Motion awards. The geographic distribution of the video and poster submissions is shown in Fig. 1, with approximately 50% from North America, 27% from Europe, 20% from Asia, and 3% from the rest of the world (Fig. 2).

The Milton Van Dyke award honors Professor Milton Van Dyke (1922–2010) [1], known for his influential work, *An Album of Fluid Motion*, and his commitment to making the book affordable for students. The top three videos and posters were recognized with this award, receiving an APS certificate, a copy of *An Album of Fluid Motion*, a cash prize, and an invitation to publish in *Physical Review Fluids* the following Fall. Three additional videos and posters were selected for the Gallery of Fluid Motion award, which conferred the same honors as the Milton Van Dyke award, excluding the cash prize.

Each video entry was evaluated by at least three judges using a grading rubric on a scale of 1 (not competitive) to 5 (highly competitive). Criteria included beauty and aesthetic value, scientific

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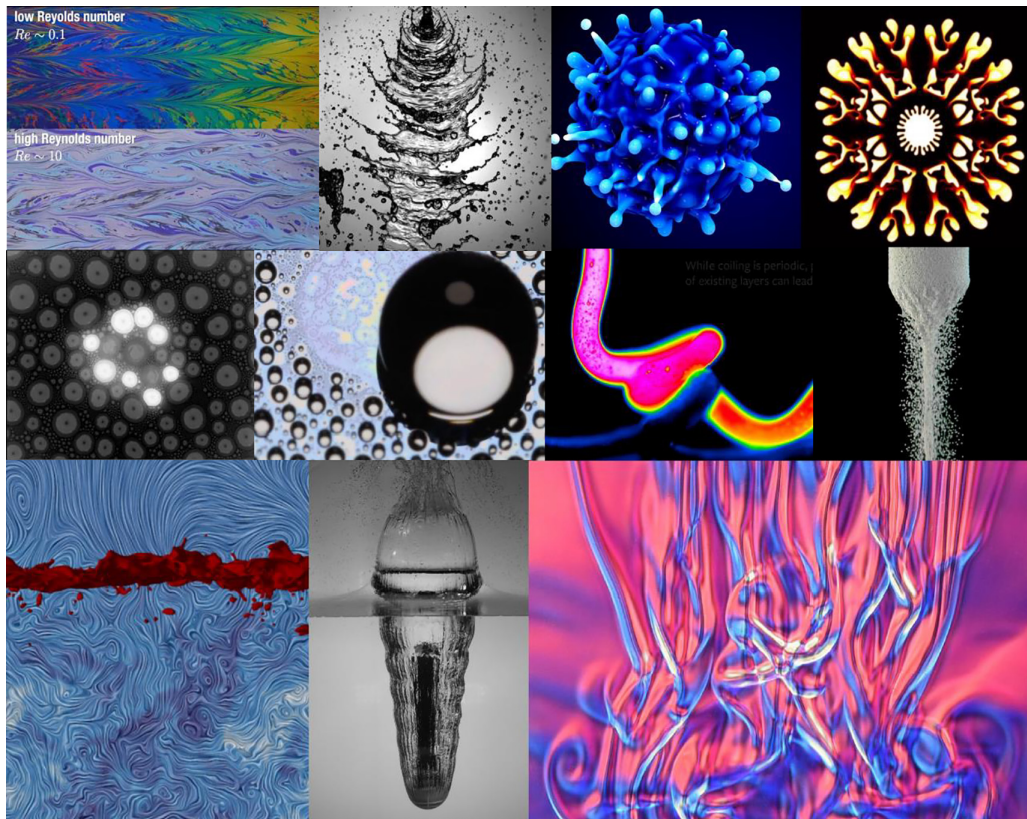


FIG. 1. A collage of 41st Annual GFM. The entries can be viewed on the 2023 GFM website (<http://gfm.aps.org/meetings/dfd-2023?>).

merit, originality, clarity, accessibility to non-experts, and promotion of fluid dynamics to general audiences. The top three videos received the Milton Van Dyke award, with three additional entries receiving the Gallery of Fluid Motion award. Poster submissions were similarly judged on a scale of 1 to 10, focusing on aesthetic value and scientific merit. The top three posters were awarded the Milton Van Dyke award, with three more receiving the Gallery of Fluid Motion award.

I. MILTON VAN DYKE AWARD WINNERS-VIDEO

(1) **The hydrodynamics of marbling art:** Yue Sun, *Harvard University*; John Bush, *Massachusetts Institute of Technology*; Saverio Spagnolie, *University of Wisconsin–Madison*; Chris Rycroft, *University of Wisconsin–Madison*

(2) **Dynamics of Frost Propagation:** David Paulovics, Christophe Raufaste, Thomas Fisch, Cyrille Claudet, Franck Celestini, *Université Côte d’Azur, CNRS, Institut de Physique de Nice*

(3) **Liquid lace:** Lauren Dreier, Tom Marzin, Romain David, Stephane Pienaar, Aman Eujayl, Raphael Vogeley, Yuchen Xi, PT Brun, *Princeton University*

II. MILTON VAN DYKE AWARD WINNERS-POSTER

(1) **Lab icebergs melt down and flip out:** Bobae Johnson, Steven Zhang, Alison Kim, Scott Weady, Leif Ristroph, *New York University, Courant Institute, Applied Math Lab*

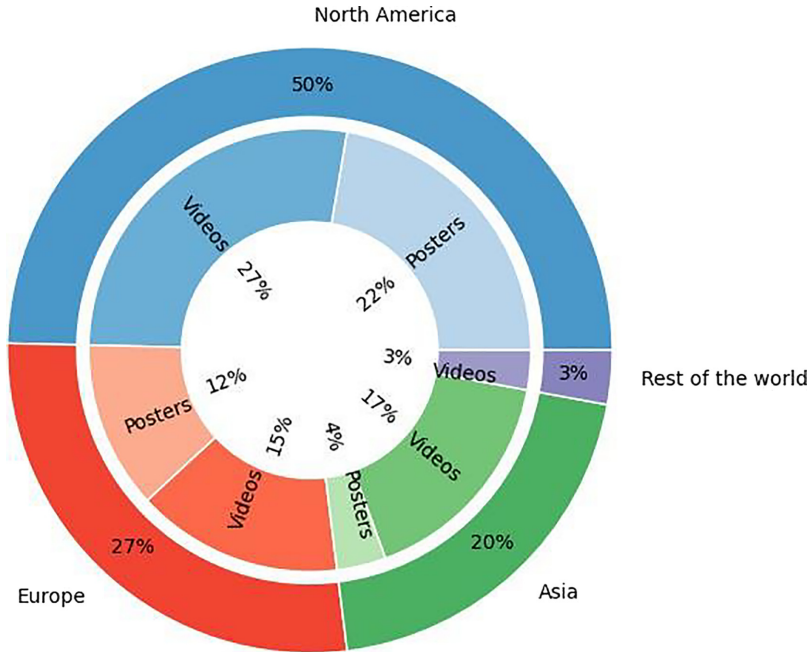


FIG. 2. Continent-wise geographic distribution of video and poster submissions.

(2) **Coat or Collapse?:** Chase Gabbard, Edward Whitesell, Joshua Bostwick, *Clemson University*

(3) **Drop Medusa:** Debashis Panda, Lyes Kahouadji, *Imperial College London*; Laurette Tuckerman, *ESPCI Paris, PSL Research University, Sorbonne Université, Université Paris-Cité*; Seungwon Shin, *Hongik University*; Jalel Chergui, *Université Paris Saclay, CNRS*; Damir Juric, *University of Cambridge*; Omar Matar, *Imperial College London*

III. GALLERY OF FLUID MOTION WINNERS

(1) **Visualization and Feature Tracking of the Atomization of Impinging Jets** (Video): Evan Pruitt, William Markiewicz, Carlos Gonzalez, Xiaofeng Liu, *San Diego State University*

(2) **Serpents and Ouroboros: Emergent collective motion of condensate droplets** (Video): Marcus Lin, *KAUST*; Philseok Kim, *Harvard University*; Solomon Adera, *University of Michigan*; Joanna Aizenberg, *Harvard University*; Yao Xi, *City University of Hong Kong*; Dan Daniel, *KAUST*

(3) **To swim fast or go far? Answers from 1-guilla, the robotic eel** (Video): Alexandros Anastasiadis, Annalisa Rossi, Laura Paez, *Ecole Polytechnique Fédérale de Lausanne*; Kamilo Melo, *KM-RoBoTa*; Eric D. Tytell, *Tufts University*; Auke J. Ijspeert, Karen Mulleners, *Ecole Polytechnique Fédérale de Lausanne*

(4) **Submerged Turbulence interaction with a Free-Surface** (Poster): Andre Calado, Elias Balaras, *George Washington University*

(5) **Hydroelastic** (Poster): John Antolik, *Brown University*; Jesse Belden, *Naval Undersea Warfare Center*; Nathan Speirs, *Brigham Young University*; and Daniel Harris, *Brown University*

(6) **Fireworks of Viscous Fingering** (Poster): Chi-Chian Chou, *National Yang Ming Chiao Tung University*; Yuka Deki, Ryuta Suzuki, Yuichiro Nagatsu, *Tokyo University of Agriculture and Technology*; Ching-Yao Chen, *National Yang Ming Chiao Tung University*

The authors wish to extend our gratitude to the Executive Committee of Division of Fluid Dynamics at American Physical Society (APS-DFD) for their continuous support. We are also

deeply grateful to Prof. James Duncan for sharing his insights and perspectives in organizing the GFM competition in Washington, DC. His contributions have been instrumental in shaping the event.

Our sincere thanks go to the panel of judges, whose thoughtful evaluations and commitment to providing results within the suggested timelines made the competition a rewarding experience for all involved.

A special thank you to Peggy Holland, Monica Malouf, and Margaret McDonald from *Meetings and More LLC*, for their exceptional management of the award ceremony.

We also extend our appreciation to Mark Doyle, Chief Information Officer at the American Physical Society, for overseeing the submission process and the online display of the Gallery, both of which were crucial to the overall success of the GFM.

We are grateful to the local organizing committee co-chairs, Profs. Ken Kiger (UMD, College Park, MD) and Michael Plesniak (GWU, Washington, DC), along with the organizing universities and numerous volunteers, for their tireless work in efficiently running the conference.

In addition to our traditional Gallery of Fluid Motion, we launched the “Traveling” Gallery of Fluid Motion (TGFM) at the DFD 2023 meeting to bring fluid dynamics to the public through the lens of art. The inaugural exhibition, *Chaosmosis: Assigning Rhythm to the Turbulent*, was held at the National Academy of Sciences (NAS) in Washington, DC, from September 2023 to February 2024 [2,3]. This museum-like exhibition marks the first time that submissions from the Gallery of Fluid Motion have been curated into an educational art experience, designed to engage viewers’ senses and bring the science of fluid dynamics to life.

The GFM competition continues to inspire fluid dynamics researchers worldwide, adding an artistic and aesthetic dimension to the field. We thank all this year’s participants and encourage researchers to keep pushing the boundaries of fluid dynamics through future GFM competitions. We are excited that our second Traveling Gallery will be held at *The Leonardo Museum* in Salt Lake City, Utah, which is inspired by Leonardo da Vinci’s fascination with flight and fluid dynamics. This exhibit will be on display from November 1, 2024, to January 31, 2025, supported by the *National Science Foundation (NSF), the American Physical Society (APS), and local universities and industries*.

[1] Wikipedia contributors, Milton van dyke—Wikipedia, the free encyclopedia (20w4) [Online; accessed 17-September-2024].

[2] <https://www.aps.org/apsnews/2023/09/fluid-motion-gallery-traveling>.

[3] <https://nap.nationalacademies.org/catalog/27427/chaosmosis-assigning-rhythm-to-the-turbulent>.