Vatsal Sanjay — PhD

Department of Physics, Durham University
PI, Computational Multiphase Physics Lab
vatsal.sanjay@comphy-lab.org • comphy-lab.org • comphy-lab
Date of birth: Feb. 5, 1996 Updated: January 16, 2026

Peer-Reviewed Publications

[1] Çayan Demirkır, Rui Yang, Aleksandr Bashkatov, **Vatsal Sanjay**, Detlef Lohse, and Dominik Krug,
To jump or not to jump: Adhesion and viscous dissipation dictate the detachment of coalescing wall-attached bubbles,
Phys. Rev. Fluids, 10(12), 123602 (2025) [15 pages];
DOI: 10.1103/PhysRevFluids.10.123602;
Repository.

[2] Josephine Mclauchlan, Jessica S. Walker, **Vatsal Sanjay**, Maziyar Jalaal, Jonathan P. Reid, Adam M. Squires, and Anton Souslov,
Bouncing microdroplets on hydrophobic surfaces,
PNAS, 122, e2507309122 (2025) [8 pages];
DOI: 10.1073/pnas.2507309122.

[3] Mandeep Saini, **Vatsal Sanjay**, Youssef Saade, Detlef Lohse, and Stéphane Popinet,
Implementation of integral surface tension formulations in a volume of fluid framework and their applications to Marangoni flows,
J. Comput. Phys., 542, 114348 (2025) [20 pages];
DOI: 10.1016/j.jcp.2025.114348;
Repository.

[4] Aleksandr Bashkatov, Florian Bürkle, Çayan Demirkır, Wei Ding, **Vatsal Sanjay**, Alexander Babich, Xuegeng Yang, Gerd Mutschke, Jürgen Czarske, Detlef Lohse, Dominik Krug, Lars Büttner, and Kerstin Eckert,
Electrolyte droplet spraying in H_2 bubbles during water electrolysis under normal and microgravity conditions,
Nat. Commun., 16, 4580 (2025) [10 pages];
DOI: 10.1038/s41467-025-59762-7;
Repository.

[5] Ayush K. Dixit, Alexandros T. Oratis, Konstantinos Zinelis, Detlef Lohse, and **Vatsal Sanjay**,
Viscoelastic Worthington jets and droplets produced by bursting bubbles,
J. Fluid Mech., 1010, A2 (2025) [32 pages];
DOI: 10.1017/jfm.2025.237;
Repository.

[6] **Vatsal Sanjay** and Detlef Lohse,
Unifying theory of scaling in drop impact: Forces & maximum spreading diameter,
Phys. Rev. Lett., 134, 104003 (2025) [9 pages];
DOI: 10.1103/PhysRevLett.134.104003;
Repository.

[7] **Vatsal Sanjay**, Bin Zhang, Cunjing Lv, and Detlef Lohse,
The role of viscosity on drop impact forces on non-wetting surfaces,

J. Fluid Mech., 1004, A6 (2025) [23 pages];
DOI: 10.1017/jfm.2024.982;
★ **Cover** of that volume of J. Fluid Mech.;
Repository.

[8] Lohit Kayal, **Vatsal Sanjay**, Nikhil Yewale, Anil Kumar, and Ratul Dasgupta,
Focusing of concentric free-surface waves,
J. Fluid Mech., 1003, A14 (2025) [39 pages];
DOI: 10.1017/jfm.2024.1089;
Repository.

[9] Arivazhagan G. Balasubramanian, **Vatsal Sanjay**, Maziyar Jalaal, Ricardo Vinuesa, and Outi Tammisola,
Bursting bubble in an elasto-viscoplastic medium,
J. Fluid Mech., 1001, A9 (2024) [36 pages];
DOI: 10.1017/jfm.2024.1073;
★ **Cover** of that volume of J. Fluid Mech.;
Repository.

[10] **Vatsal Sanjay**, Pierre Chantelot, and Detlef Lohse,
When does an impacting drop stop bouncing?,
J. Fluid Mech., 958, A26 (2023) [20 pages];
DOI: 10.1017/jfm.2023.55;
Repository.

[11] **Vatsal Sanjay**, Srinath Lakshman, Pierre Chantelot, Jacco H. Snoeijer, and Detlef Lohse,
Drop impact on viscous liquid films,
J. Fluid Mech., 958, A25 (2023) [28 pages];
DOI: 10.1017/jfm.2023.13;
Repository.

[12] Bin Zhang, **Vatsal Sanjay**, Songlin Shi, Yinggang Zhao, Cunjing Lv, Xi-Qiao Feng, and Detlef Lohse,
Impact forces of water drops falling on superhydrophobic surfaces,
Phys. Rev. Lett. 129, 104501 (2022) [7 pages],
DOI: 10.1103/PhysRevLett.129.104501, OA: 10.48550/arXiv.2202.02437;
see also

- As of March/April 2024, this *highly cited paper* received enough citations to place it in the top 1% of the academic field of Physics based on a highly cited threshold for the field and publication year. Source: Web of Science.
- ★ Editor's Suggestion of that issue.
- Davide Castelvecchi, Research Highlight: "The physics of a bouncing droplet's impact", Nature, article: d41586-022-02302-w (29/8/2022)
- Repository.

[13] **Vatsal Sanjay**, Uddalok Sen, Pallav Kant, and Detlef Lohse,
Taylor-Culick retractions and the influence of the surroundings,
J. Fluid Mech. 948, A14 (2022) [37 pages];
DOI: 10.1017/jfm.2022.671;
Repository.

[14] **Vatsal Sanjay**, Detlef Lohse, and Maziyar Jalaal,
Bursting bubble in a viscoplastic medium,
J. Fluid Mech. 922, A22 (2021) [24 pages];
DOI: 10.1017/jfm.2021.489;
Repository.

[15] Olinka Ramirez-Soto, **Vatsal Sanjay**, Detlef Lohse, Jonathan T. Pham, and Doris Vollmer,
Lifting a sessile oil drop with an impacting one,
Sci. Adv. 6, eaba4330 (2020) [11 pages];
DOI: 10.1126/sciadv.aba4330;
Repository.

[16] Abhinav Jain, **Vatsal Sanjay**, and Arup Kumar Das,
Consequences of inclined and dual jet impingement in stagnant liquid and stratified layers,
AIChE J. 65(1), 372-384 (2019) [12 pages],
DOI: 10.1002/aic.16373, OA: archived pdf.

[17] Anurag Soni, **Vatsal Sanjay**, and Arup Kumar Das,
Formation of fluid structures due to jet-jet and jet-sheet interactions,
Chem. Eng. Sci. 191, 67-77 (2018) [11 pages],
DOI: 10.1016/j.ces.2018.06.055, OA: archived pdf.

[18] **Vatsal Sanjay** and Arup Kumar Das,
Numerical assessment of hazard in compartmental fire having steady heat release rate from the source,
Build. Simul. 11(3), 613-624 (2018) [12 pages],
DOI: 10.1007/s12273-017-0411-y, OA: archived pdf.

[19] **Vatsal Sanjay** and Arup Kumar Das,
On air entrainment in a water pool by impingement of a jet,
AIChE J. 63(11), 5169–5181 (2017) [23 pages],
DOI: 10.1002/aic.15828, OA: archived pdf.

[20] **Vatsal Sanjay** and Arup Kumar Das,
Formation of liquid chain by collision of two laminar jets,
Phys. Fluids 29, 112101 (2017) [12 pages],
DOI: 10.1063/1.4998288, OA: archived pdf;
Repository.

For an up-to-date list of publications, visit: Google Scholar.