Virgile Thiévenaz

Chargé de recherche au CNRS

UMR 7636 – Physique et Mécanique des Milieux Hétérogènes
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Research Interests: Physics of fluids, Multiphase flows, Capillarity, Freezing, Granular suspensions, Physics of plants

I am a physicist, specialized in fluid mechancis and soft matter physics. My work generally involves small scale experiments and theoretical analysis. My main exprimental skill concerns the use of high-speed cameras and image processing to investigate complex flows, mostly capillary flows.

Employment

CNRS Researcher – section 10, affected at UMR 7636 PMMH, CNRS, ESPCI Paris, Sorbonne Université and Université Paris Cité – **since 01/10/2023**

Post-doctoral researcher – Laboratoire PIAF, INRAE, Clermont-Ferrand – 26/09/2022 to 30/09/2023
High-speed imaging of embolisms in tree leaves (Supervisors : Eric Badel et Hervé Cochard)

Post-doctoral researcher – University of California, Santa Barbara – 14/09/2020 to 13/09/2022
Capillary flows of suspensions (Supervisor: Alban Sauret)

Post-doctoral researcher – École Polytechnique, Paris, France – 01/10 to 13/12/2019
Describing freezing drop impacts through an effective viscosity model (Supervisor: Christophe Josserand)

Research Internship – Max-Planck Institute for Dynamic and Self-Organisation, Göttingen, Germany – 2015 (3 months)
Plateau-Rayleigh instability on a soft fiber (Supervisor: Oliver Baümchen)

R&D Engineer Internship (6 months) – Schlumberger DBR Research Center, Edmonton, AB, Canada – 2014
Oil flow in microfluidic channels (Supervisor: Vincent Sieben)

Education

PhD in Fluid Mechanics – Institut ∂'Alembert, Sorbonne Université, Paris, France – 2016-2019
Drop impact on supercooled surfaces: spreading, splashing, retraction and freezing.
(Supervisors: Christophe Josserand, Thomas Séon)

Master of Science – International Center for Fundamental Physics – Université Pierre et Marie Curie, Paris, France – 2015-2016 (Major: Macroscopic physics and complexity)

Diplôme d'Ingénieur (Advanced Master in Science and Technology) – ESPCI Paris, France – 2012-2016

Preparatory Classes in Physics and Chemistry – Lycée Janson-de-Sailly, Paris, France – 2010-2012

Peer-reviewed publications

V. Thiévenaz & A. Sauret
Rhéologie 43 (2023)
Déformations locales et viscosité des suspensions non-Browniennes : application au cas bidisperse.

S. Rajesh, S. Peddada, **V. Thiévenaz** & A. Sauret
Journal of Non-Newtonian Fluid Mechanics 104921 (2022)
Pinch-off of bubbles in a polymer solutions

V. Thiévenaz & A. Sauret
Physical Review Fluids 7, 110501 (2022)
Fragmentation of viscous compound liquid ligaments

S. Rajesh, **V. Thiévenaz** & A. Sauret
Soft Matter 18, pp3147-3156 (2022)
Transition to the viscoelastic regime in the thinning of polymer solutions

V. Thiévenaz & A. Sauret
Proceedings of the National Academy of Sciences of the USA 119, 13, e2120893119 (2022)
The onset of heterogenity in the pinch-off of suspension drops

D-H. Jeong, M. Ka Ho Lee, **V. Thiévenaz**, M. Z. Bazant and A. Sauret
Journal of Fluid Mechanics 36, A36 (2022)
Dip-coating of bidisperse particulate suspensions

V. Thiévenaz, S. Rajesh & A. Sauret
Soft Matter 17, pp6202-6211 (2021)
Droplet detachment and pinch-off of bidisperse particulate suspensions

V. Thiévenaz & A. Sauret
Physical Review Fluids 6, L062301 (2021)
Pinch-off of viscoelastic particulate suspensions

V. Thiévenaz, T. Séon & C. Josserand
Europhysics Letters 132, p24002 (2020)
Freezing-damped impact of a water drop

V. Thiévenaz, T. Séon & C. Josserand
Physical Review Fluids (accepted March 2020)
Retraction and freezing of a water film on ice

V. Thiévenaz, T. Séon & C. Josserand
Journal of Fluid Mechanics 874, pp756-773 (2019)
Solidification dynamic of an impacted drop

In revision

V. Thiévenaz, N. Vani & A. Sauret
Caging and fluid deformations in dense bidisperse suspensions
https://arxiv.org/abs/2311.09112

V. Thiévenaz & A. Sauret
Universal equation describes the shape of air bubbles trapped in ice
http://arxiv.org/abs/2402.13456

Talks at conferences and invited seminars

In 2024, I am invited to Norwich, England for two weeks by Cambridge University's **Isaac Newton Institute** for the program *The mathematics of multiphase flows with applications*, including the Early Career Researcher courses and the workshop.

Invited talk at the Rencontre du Non Linéaire – Paris, France – March 20th 2024
La forme des bulles piégées dans la glace

APS March Meeting – Minneapolis, MN, USA – March 2024
The peculiar shapes of air bubbles trapped in ice

Invited seminar – InPhyNi, Nice, France – December 12th, 2023
Transition to non-newtonian dynamics in drops of polymer solutions

Fluids and Complexity Conference – Nice, France – December 2023
Poster: *Transition to non-newtonian dynamics in drops of polymer solutions*

Invited seminar – Laboratoire FAST, Orsay, France – December 9th, 2022
Pinch-off of complex suspensions drops

Invited seminar – Laboratoire PMMH, ESPCI Paris, France – December 2nd, 2022
Pinch-off of complex suspensions drops

Congrès du Groupe Français de Rhéologie – Rennes, France – October 2022
Déformations locales et viscosité des suspensions non-Browniennes : application au cas bidisperse

EFMC – Athens, Greece – September 14th 2022
Fast stretching and breakup and filaments of suspensions

SoCal Fluids Conference XV – UCLA, Los Angeles, USA – April 23th 2022
Fast stretching and breakup and filaments of suspensions

APS DFD Meeting, Phoenix, USA – 2021
Dislocation of suspensions: a model for the accelerated pinch-off of suspension drops

Invited seminar – Saint-Gobain Recherche, Aubervilliers, France – September 30th 2021
Dense suspensions and equivalent granular packings

Invited seminar – Institut Charles Coulomb, Montpellier, France – September 12th 2021
Dense suspensions and equivalent granular packings

Invited seminar – Laboratoire de Physique des Solides, Orsay, France – September 10th 2021
Dense suspensions and equivalent granular packings

Invited seminar – Institut ∂'Alembert, Paris, France – Septembre 7th 2021
Dense suspensions and equivalent granular packings

SoCal Fluids Conference XIV – April 10th 2021

Rencontres du Non Linéaire 2021 – Socal Fluids XIV – March 25th 2021

Invited seminar – Institut Lumière Matière, Lyon, France – November 17th 2020
Impact and freezing of water drops

APS DFD Meeting, Seattle, USA – 2019
Freezing-damped drop impact

APS DFD Meeting, Atlanta, USA – 2018
Drop impact and Solidification: Contact angle dynamics

Seminar at IMES, Pr. Kochmann group, ETHZ, Zürich – 2018
Drop impact and Solidification

EFMC, Vienna, Austria – 2018
Drop impact and Solidification: Contact angle dynamics

APS DFD Meeting, Denver, USA – 2017
Breakfast patterns of frozen impacted drops

Awards

Milton Van Dyke Award – Gallery of Fluid Motion 2021
for the video *Fragmentation of viscous compound liquid ligaments*, which was ranked first of 98.

Teaching and Supervision

Supervision of two PhD students (D-H. Jeong and S. Rajesh), of several undergraduate and graduate students at UC Santa Barbara, and of one graduate student at Sorbonne Université.

Undergraduate teaching at Sorbonne Université : 64 hours/year in 2017 and 2018, including Acoustics (1st year), Experimental Methods (2nd year), Fluid Mechanics (tutorials and experimental classes 3rd year), Numerical Methods (3rd year).

Miscellaneous

Languages: **French** (native), English (fluent), German (conversational). Basics of Italian, Spanish, Russian and Japanese.

Referee for Physical Review Letters, the Journal of Fluid Mechanics, Langmuir and the European Journal of Mechanics / A Solids.

I greatly value the **esthetics** of my work. I have realised three posters (2016, 2017 and 2022) and two videos (2018, 2021) for the **APS Gallery of Fluid Motion**, the latter of which was awarded the **Milton Van Dyke Award**. I have turned some of my research into **art photography**, in collaboration with **Art in Research** (artinresearch.com). During winter 2023, my work was exposed at the American National Academy of Sciences in Washington D.C. during the **Chaosmosis** exhibition (http://www.cpnas.org/exhibitions/current-exhibitions/fluid-motion.html). More information can be found on my website at vthievenaz.fr/en/gallery.html.

References

Christophe Josserand
Directeur de recherche au CNRS
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Thomas Séon
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