Virgile Thiévenaz

Chargé de recherche au CNRS

UMR 7636 – Physique et Mécanique des Milieux Hétérogènes
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Research Interests: Experimental Physics of Fluids, Multiphase Flows, Capillarity, Freezing, Suspensions, Rheology, Physics of plants

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

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)
Transition to the viscoelastic regime in the thinning of 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'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 student at UC Santa Barbara (2020-2022), and of one graduate student at Sorbonne Université in 2018.

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.

Reviewer 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). In late 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
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Thomas Séon
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