

CV - Lydéric Bocquet

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Present position: Professor at Collège de France

Google Scholar id: <http://scholar.google.fr/citations?user=TOxI8oAAAAJ&hl=fr>

Academic record and education

- 2026- ..., Professor at Collège de France, full chair
- 2022-2023, Professor at Collège de France, Chair of Innovation
- 2022-..., Member of the french Academy of Science
- 2014-2026, Directeur de Recherche at CNRS and joint Professor at ENS
- 2002-2014, Full Professor (PRCE) at Université Lyon 1 and Institut Universitaire de France (2005-2010)
- 1995-2002, Chargé de recherche au CNRS
- 1994, Phd in statistical physics, Lyon (advisor: JP Hansen)
- 1989-1993, studies at Ecole Normale Supérieure (Paris)

Research activities in a few lines

I am a scientist, working in physics. One of my main thrusts over the last 10 years is *nanofluidics, the science of molecular flows*. This world of the infinitely small in fluidics is the frontier where the continuum of fluid mechanics meets the atomic nature of matter, and even its quantum nature. There, we observe frictionless flows, emerging quantum effects, and memory effects, which now make it possible to dream of ionic computers.

Nanofluidics is also a field where there is a short path between fundamental science and groundbreaking innovation, because the sometimes 'exotic' nanofluidic properties offer unexpected solutions to develop new technologies relevant to the environmental transition, notably for desalination, water remediation, or blue energy - notably osmotic energy. Our goal is to “*make it work*”. This fundamental research led to the creation of four start-up companies on these topics.

I have also a strong interest in the physics of everyday life, with contributions on stone-skipping, cooking, splashes, ironing, teapot effect, ski waxing, etc.

Publications, conferences, ...

- 200+ publications in international reviews [incl. 8 Nature, 2 Science, 25 Nature daughter journals, etc.; *H-index* : 95; 36k+ citations (Goggle Scholar)]
- 11 patents, 5 licensed
- 130+ invited conferences (mostly international)
- 120+ seminars (Cambridge, Harvard, MIT, NYU, ...)
- author of two first grade books, on mechanics and thermodynamics (Dunod éditeur)

Selected publications

Full list, see: <https://www.phys.ens.fr/~lbocquet/publication.html>

- « *Hydroelectric energy conversion of waste flows through hydro-electronic drag* », Baptiste Coquinot, Lydéric Bocquet and Nikita Kavokine, **Proceedings of the National Academy of Science** (PNAS), USA, **121**, e2411613121 (2024)
- « *Long-term memory and synapse-like dynamics in two-dimensional nanochannels* », P. Robin, T. Emmerich, A. Ismail, A. Niguès, Y. You, G.-H. Nam, A. Keerthi, A. Siria, A.K. Geim, B. Radha, L. Bocquet, **Science** **379**, 161-167 (2023).
- « *Fluctuation-induced quantum friction in nanoscale water flows* », N. Kavokine, M.-L. Bocquet and L. Bocquet, **Nature** (2022).
- « *Modeling of emergent memory and voltage spiking in ionic transport through angstrom-scale slits* », P. Robin, N. Kavokine, and L. Bocquet, **Science** **373**, 687–691 (2021).
- « *Massive radius-dependent flow slippage in single carbon nanotubes* », E. Secchi, S. Marbach, A. Niguès, D. Stein, A. Siria and L. Bocquet, **Nature** **537** 210 (2016)
- « *Giant osmotic energy conversion measured in a single transmembrane boron-nitride nanotube* », A. Siria, P. Poncharal, A.-L. Biance, R. Fulcrand, X. Blase, S. Purcell, and L. Bocquet, **Nature** **494** 455 (2013)
- « *The revealed secrets of stone skipping* », C. Clanet, F. Hersen, L. Bocquet **Nature** **427** 29 (2004)

Awards (selection)

- Energy frontier award, ENI awards (2025)
- 2025 Lars Onsager professorship, The Norwegian University of Science and Technology (NTNU), Norway
- Innovation Medal of CNRS (2024)
- 2024 finalist of the European inventor of the year, European Patent Office
- Elected member of the french Academy of Science
- *ERC Synergy Grant* award of the European Research Council (2022) – project *n-AQUA* -
- *ERC Advanced Grant* award of the European Research Council (2018) – project *Shadoles* -
- *ERC Advanced Grant* award of the European Research Council (2010) – project *Micromégas* -
- 2022 Gentner-Kastler prize, jointly awarded by the german Deutsche Physikalische Gesellschaft and the french Société Française de Physique
- Hinshelwood lecture, Oxford University (2018)

Industrial relationships, transfer of technology and innovation

For more than 15 years, I served as scientific consultant for various industrial groups, Rhodia, Blue Star Silicon, Saint Gobain, Plastic Omnium and various smaller size companies.

Innovation and business creation :

- **co-founder of the start-up, Sweetch-Energy**, on osmotic energy launched in 2015. The company has ~80 employees in 2026. An industrial pilot has been installed in 2025 on the Rhône river in collaboration with Compagnie Nationale du Rhône and EDF Hydro.
- **co-founder of a start-up, Hummink**, on nanoprinting by AFM tuning fork in 2020. The company has ~20 employees in 2026. The startup has designed a "Nazca" machine for micro- and nanoscale ink deposition. It is aiming for industrial cleanroom installation (negotiations underway with microelectronics giants).
- **co-founder of a start-up, Altr** (US based) on alcohol separation, seeded by patent and membranes developed in my laboratory, then scaled up by Altr. Created in 2020 and at the industrial pilot and pre-commercialization stage.
- **co-founder of a start-up, Ilion**, on a new desalination technology, based on (nanofluidics-based) patents developed in my laboratory. Created in 2025, and is now developing an industrial technology.

Institutional responsibilities

2023 - 2026, member of the scientific council of *Terra Academia* (<https://terra-academia.org>)
2018 - 2023, member of the scientific council of CNRS
2016 - 2021, director of the *Institut Pierre Gilles de Gennes* for micro & nanofluidics, Paris (www.institut-pgg.fr)
2015 - 2019 director of the ENS Master Studies in Fundamental Physics (ICFP), ~150 students.
2006 - 2013, head of the “*Liquids at interfaces*” group in the LPMCN (~ 45 people), Univ. Lyon 1
2010 - 2012, deputy director of the condensed matter physics lab (LPMCN, 100 people), Univ. Lyon 1
2010 - 2014, member of the scientific committee of the *Institut de Physique* of the CNRS

Commissions of trust

2016 - 2023, member of the ERC PE03 panel
2011 - 2021, member of the editorial board of *Physical Review X* (American Physical Society)
2015 – 2017, member of the editorial board of *Journal of Chemical Physics* (AIP)
2008 – 2012, member of the CNRS national committee (CoNRS) for condensed matter (sec. 05)