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RESEARCH INTERESTS - EXPERIMENTS

Active matter
Complex interfaces
Microfluidic engineering

EDUCATION

- 2010 - 2014 : Ph.D. thesis** • Göttingen University (Germany)
- 2008 - 2009 : M.Sc. year 2 (Specialty : Nanosciences)** • Toulouse University (Toulouse, France)
- 2007 - 2008 : M.Sc. year 1 (Erasmus mobility)** • Lund University (Lund, Sweden)
- 2004 - 2007 : Bachelor in Physics** • Nantes University (Nantes, France)

ACADEMIC POSITIONS

November 2016 - : Research associate
New York University - Courant Institute for Applied Mathematics (New York, USA)
Advisors : Profs. Mike Shelley, Jun Zhang and Leif Ristroph

- Hydrodynamic interactions of autonomous artificial swimmers (Au/Pt nanorods), emergence of directed and collective motions.

October 2014 - October 2016: Research associate
Brown University - School of engineering (Providence, USA)
Advisor : Prof. Petia Vlahovska

- Electrorotation of spherical and anisotropical particles.
Electrohydrodynamic instabilities at fluid interfaces.
Dynamics of Giant Unilamellar Vesicles (GUV) in microfluidic environment.

April 2010 - August 2014: Ph.D. candidate
Max Planck Institute for Dynamics & Self-organization (MPIDS) (Göttingen, Germany)
Advisor : Prof. Jean-Christophe Baret

- Microfluidic methods for the characterization of interfacial dynamic processes. Applications to surfactant adsorption and capsule formation at droplet interface.
Ph.D. thesis : "Dynamics of Soft interfaces in microfluidic environment". Grade : *Magna cum laude*

February - September 2009: Master internship
University of Twente (Enschede, The Netherlands)
Advisor : Prof. Han Gardeniers

- Development of a microfluidic transport for sample solution for on-chip NMR.
M.Sc. degree.

PUBLICATIONS

- **Streaming from the equator of a drop in an external electric field**

Quentin Brosseau and Petia Vlahovska
Phys. Rev. Letter. **119** 034501 (2017)

- **Electrohydrodynamic Quincke rotation of a prolate ellipsoid**

Quentin Brosseau, Gregory Hickey and Petia Vlahovska
Phys. Rev. Fluids **2** 014101(2017)

- **Stabilisers for water-in-fluorinated-oil dispersions : Key properties for microfluidic applications.**

Philipp Gruner, Birte Riechers, Laura Andreina, Quentin Brosseau, Florine Maes, Thomas Beneyton, Deniz Pekin and Jean-Christophe Baret
Current Opinion in Colloid & Interface Science **20** 183-191 (2015)

- **Monitoring reactive microencapsulation dynamics using microfluidics.**

Ingmar Polenz, Quentin Brosseau and Jean-Christophe Baret
Soft Matter **11** 2916-2923 (2015)

- **Microfluidic Dynamic Interfacial Tensiometry (μ DIT).**

Quentin Brosseau, Jérémy Vrignon and Jean-Christophe Baret
Soft Matter **10** 3066-3076 (2014)

- **Dynamics of molecular transport by surfactants in emulsions.**

Yousr Skhiri, Philipp Gruner, Benoit Semin, Quentin Brosseau, Deniz Pekin, Linas Mazutis, Victoire Goust, Felix Kleinschmidt, Abdeslam El Harrak, J. Brian Hutchison, Estelle Mayot, Jean-François Bartolo, Andrew D. Griffiths, Valérie Taly and Jean-Christophe Baret
Soft Matter **8** (2012) 10618-10627

- **Rheotaxis of elongated bimetallic nanoswimmers**

Quentin Brosseau, Yang Wu, Leif Ristroph, Jun Zhang, Michael Ward and Michael Shelley
Manuscript in preparation

EXPERIMENTAL SKILLS

- **Microfabrication** : Soft-lithography & Clean room techniques, PDMS/NOA-microfluidic chips, Hydrophilic/Hydrophobic channel coating, on-chip electrodes integration. Fabrication of sub-millimetric ellipsoidal particles.
- **Emulsification** : Surfactant stabilization, Pickering emulsions, Ferrofluids.
- **Membranes, Capsules** : Electroformation of GUV. Production of polyurea microcapsules by interfacial polymerization
- **Fluid / Interface characterization** : Pendant drop tensiometry, Oscillating drop technique, Bulk rheology, Langmuir trough, Dynamic light scattering.
- **Imaging** : μ PIV, Confocal microscopy, 3D X-ray tomography.
- **Computational** : CAD, MatLab, L^AT_EX, Lab-view, Image treatment

TEACHING AND INVITED LECTURES

- **October 2011 - March 2012** : Introduction to Biophysics & Complex systems. Teaching Assistant (120h).
- **October 2012-March 2013** : Introduction to Particle and Nuclear physics. Teaching Assistant (120h).
- **May 2014** : Dynamics of soft interfaces, Lecture, Brown University Fluid seminar.
- **September 2016** : Electrohydrodynamics at interfaces. Lecture, Courant Institute, AML seminar.
- **November 2016** : Electrohydrodynamics at interfaces. Lecture, Brown University Fluid seminar.

STUDENT MONITORING

- **Arthur Hardiagon** Master student, Summer project on the analysis of 3D packing of emulsions via X-ray tomography. MPIDS.
- **Andrew Oberlander** Undergraduate, Undergraduate thesis on the electrohydrodynamics of surfactant covered interfaces. Brown University.
- **Gregory Hickey** Undergraduate, One year project on the electrorotation of ellipsoidal particles. Publication in P.R. Fluids journal. Brown University.
- **Sunyi Wang and Mei Wu** Undergraduates, One semester project on the measurement of velocity profiles past an obstacle in a 2D vertical soap film. Courant Institute AML.
- **André Borrhors** Undergraduate, Summer project on the development of a Matlab program for active particle tracking and trajectory analysis. NYU chemistry department.

SELECTED CONFERENCE CONTRIBUTIONS

- **69th APS-DFD : November 2016**
Portland (USA), Oral presentation
- **Cargèse summer school Active Complex Matter : July 2016**
Cargèse (France), Poster presentation
- **68th APS-DFD : November 2015**
Boston (USA), Oral presentation
- **6th Bubble & droplet interfaces conference : May 2015**
Potsdam (Germany), Oral presentation
- **67th APS-DFD : November 2014**
San Francisco (USA), Oral presentation
- **International Soft Matter Conference : September 2013**
Roma (Italy), Poster presentation
- **GRC “Bio-soft matter : Dynamical and structural complexity” : August 2013**
New London (USA), Poster presentation
- **Euromech colloquium : “Dense flows of soft objects” : May 2013**
Grenoble (France), Oral presentation
- **Bubble & droplet interfaces conference : May 2012**
Kraków (Poland), Oral presentation
- **GRC “Soft Matter out of equilibrium” : August 2011**
New London (USA), Poster presentation

OTHER

- **Peer-Reviewing** : Nature, Scientific Reports ; Soft Matter ; Langmuir ; Microfluidics & Nanofluidics, Interface Focus.
- **Outreach** : Organization committee “5th European Postgraduate Fluid Dynamics Conference” (EPFDC 2011)
- **Languages** : French (native), English (fluent), German (fluent)