

PAUL GRANDGEORGE

Ph.D. in MECHANICAL ENGINEERING – RESEARCHER IN SUSTAINABLE MATERIAL SCIENCE

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🇫🇷 French - Dutch

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📍 Seattle, WA-98195, USA

🌐 paulgrandgeorge.com

RESEARCH EXPERIENCE

Post-Doctoral Associate – Bio-Based Materials

Roumeli Research Group – University of Washington (UW)

📅 October 2021 – now

📍 Seattle, USA

Supervisor: Prof. Eleftheria Roumeli

- Development of **bio-based materials** to replace petroleum-derived plastics
- Transforming unprocessed **biomatter** (algae and plant cells, bacterial cellulose) into strong and stiff **functional materials**
- Investigating the hydration of green cements to minimize carbon footprint

Post-Doctoral Associate – Mechanics of Fibers in Contact

Flexible Structures Laboratory – École Polytechnique Fédérale de Lausanne (EPFL)

📅 March 2018 – September 2021

📍 Lausanne, Switzerland

Supervisor: Prof. Pedro M. Reis

- Experimental mechanics of elastic rods in the context of surgical knots
- Characterization of a carbon nano-skin with shape and pressure measurements of pendant drops (collaboration with chemists of LMOM – EPFL)

EDUCATION

Ph.D. in Mechanics – Elasticity and Capillarity

♾️Alembert Institute – Sorbonne Université

📅 February 2015 – February 2018

📍 Paris, France

Supervisors: Prof. Arnaud Antkowiak & Prof. Sébastien Neukirch

Thesis Title: Elasto-capillarity in fibrous media for the creation of ultra-extensible objects

- Experimental study of the mechanics of elasto-capillary interactions between elastic fibers and wetting liquids

Research & Development Engineer – Internship

Electro-Medical Systems (EMS)

📅 March 2014 – August 2014

📍 Nyon, Switzerland

Supervisors: Dr. Marcel Donnet & Dr. Eric Boilat

Project title: Dental small-scale sandblast nozzle: Characterization and design

B.S. and M.S. in Mechanical Engineering

École Polytechnique Fédérale de Lausanne (EPFL)

📅 September 2009 – September 2014

📍 Lausanne, Switzerland

- Major in **Solid and Fluid Mechanics**
- Awarded an **excellence fellowship** during my 3rd year of B.S.
- International exchange year abroad (Erasmus in Barcelona, Spain)

French “Baccalauréat” with international Dutch Option

Lycée International de Ferney-Voltaire

📅 July 2009

📍 Ferney-Voltaire, France

- Equivalent grade A pass with honors (Mention “très bien” – 17.6/20)

ABOUT ME

I am passionate about **understanding** and **predicting** the behavior of **physical systems** around me. My goal is to join a dynamic team and apply my **experimental** and **analytical** skills to enable the design of **sustainable materials** and **technologies**.

SKILLS

Rapid prototyping

Laser cutting

Conventional Machining

X-Ray Tomography

Spectroscopy

Polymer science

Polymer synthesis

Mechanical testing

Thermogravimetric analysis

SOFTWARE

FEM (Abaqus)

CAD (Catia)

Blender

Matlab

Python

LaTeX

Illustrator

ImageJ

HTML/CSS



AWARDS & PRIZES

Best-article in physics

Awarded by the Scientific Magazine "La Recherche"

📅 2018

📍 Paris, France

Lutech 2018 Trophy

Awarded by the Technology Acceleration and Transfer Society SATT-Lutech

📅 2018

📍 Paris, France

Excellence Fellowship

Awarded by EPFL

📅 2012

📍 Lausanne, Switzerland

PUBLIC OUTREACH AND VULGARIZATION

Presentation of our lab to students of the Chief Leschi High School, Puyallup WA

University of Washington

📅 April 2022

📍 Roumeli Lab, Seattle, USA

- Demonstrations of green materials and processing and testing methods (tensile tests of hot-pressed sheets)

English/French scientific vulgarization TV show – “Tech24”

Radio France Internationale and France24

📅 December 2018

📍 d'Alembert Institute, Paris, France

Ultra-stretchable membrane using capillarity and elasticity

French scientific vulgarization TV show – “E=m6”

French TV Channel M6

📅 January 2016

📍 d'Alembert Institute, Paris, France

Man versus animal: the game!

TEACHING AND PROJECTS SUPERVISION

Teaching Assistant during my Ph.D. thesis and Post-docs

Mechanical and Material Engineering courses at Sorbonne Université and EPFL

📅 September 2015 – now

📍 Paris, France and Lausanne, Switzerland

- Preparation and teaching of classes to undergrads and master students
- Supervised 20+ students' research projects (Undergrads, masters, and PhD students)

SELECTED PUBLICATIONS

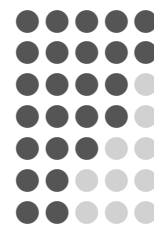
- J. L. Fredricks, A. M. Jimenez, **P. Grandgeorge**, R. Meidl, E. Law, J. Fan, and E. Roumeli, *Hierarchical biopolymer-based materials and composites*, Journal of Polymer Science, *in press* (2023)
- K. Liao, **P. Grandgeorge**, A. M. Jimenez, B. H. Nguyen, and E. Roumeli, *Effects of mechanical cell disruption on the morphology and properties of spirulina-PLA biocomposites*, Sustainable Materials and Technologies, **36** (2023), e00591
- **P. Grandgeorge**, T. G. Sano, and P. M. Reis, *An elastic rod in frictional contact with a rigid cylinder*, Journal of the Mechanics and Physics of Solids (JMPS), **164** (2022), 104885
- **P. Grandgeorge**, C. Baek, H. Singh, P. Johanns, T. G. Sano, J. H. Maddocks, and P. M. Reis, *Mechanics of two filaments in tight orthogonal contact*, Proceedings of the National Academy of Science – U.S.A., **118** (2021), 15
- **P. Grandgeorge**, N. Krins, A. Hourlier-Fargette, C. Laberty-Robert, S. Neukirch, and A. Antkowiak, *Capillarity-induced folds fuel extreme shape changes in thin wicked membranes*, Science, **360** (2018), 296-299
- **P. Grandgeorge**, A. Antkowiak, and S. Neukirch, *Auxiliary soft beam for the amplification of the elasto-capillary coiling: towards stretchable electronics*, Advances in colloids and interfaces, **255** (2018), 2-9

PATENTS

- **Composite Membrane and Method for Manufacturing Such a Membrane** – Patent filed on march 10, 2017 – ref. FR1751950 (US patent US20200010989A1) – **Authors:** A. Antkowiak, P. Grandgeorge, N. Krins, and C. Laberty-Robert
- **Method of tuning mechanical properties of a bioplastic** – Patent filed on August 24, 2022 US patent Application 63/373,437 (*Patent pending*) – **Authors:** E. Roumeli, A. M. Jimenez, P. Grandgeorge, H. Iyer, I. Campbell, M. Holden, and K. Liao
- **Biological cement with algal biomatter** – Patent filed on August 24, 2022 US patent Application 63/373,439 (*Patent pending*) – **Authors:** E. Roumeli, M. Lin, P. Grandgeorge, and A. M. Jimenez

LANGUAGES

French
English
Spanish
Dutch
Italian
German
Catalan



HOBBIES & INTERESTS

Taekwondo Salsa dancing
Guitar Hiking Running
Poetry Philosophy & Religion
Sustainability

REFERENCES

Prof. Eleftheria Roumeli

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Head of the Roumeli Lab (UW)

Prof. Pedro M. Reis

@ pedro.reis@epfl.ch

Head of the Flexlab (EPFL)

Prof. Sébastien Neukirch

@ sebastien.neukirch@sorbonne-universite.fr

CNRS Professor at the d'Alembert Institute (Sorbonne Université)