JOSEPH BRUNET

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EDUCATION

École des Mines de Saint-Étienne, France *Expected Nov 2020*
Ph.D. candidate in Biomechanics

Paris Descartes University, France *Sep 2016 - Oct 2017*
Master of Science - MS, Biomedical Engineering- Biomechanics.

École Nationale Supérieure d'Arts et Métiers, France *Sep 2014 - Oct 2017*
Bachelor of Engineering, Mechanics.

RESEARCH EXPERIENCE

PhD Researcher | École des Mines de Saint-Étienne, France *Nov 2017 - Present*
Advisor: Pierre Badel
Analysis of aortic dissection mechanisms using X-ray micro-tomography

- Development of a tension-inflation device fitting inside an X-ray tomography setup
- In vitro 3D imaging of dissecting pressurized arterial segments using X-ray microtomography
- Modeling of the observed phenomena using extended finite element method

Research intern | Medtronic, France *Jul 2017 - Nov 2017*
Experimental and numerical study on meshes for abdominal hernia repair

- Uniaxial, biaxial, and indentation tests on different type of textiles
- Modeling the mesh behaviors observed with a nonlinear, anisotropic, plastic model

MSc Researcher | École des Mines de Saint-Étienne, France *Jan 2017 - Jul 2017*
Advisor: Pierre Badel
Investigation of shear delamination during rupture of arterial medial tissue using numerical model

CONFERENCE PRESENTATIONS

A numerical design of experiment approach to understand aortic dissection onset and propagation. Oral presentation delivered at the **44th Congress of the Société de Biomécanique**, Poitiers, France, October, 2019

Chairman of the session "Macro-scale biofluids", **44th Congress of the Société de Biomécanique**, 2019 at University of Poitiers, France

A combined experimental-numerical meso-scale approach of tensile rupture in arterial medial tissue using X-ray tomography. Poster presentation delivered at the **8th World Congress of Biomechanics**, Dublin, Ireland, July, 2018.

Characterization and modelling of rupture in arterial medial tissue under tension from in situ experiments with X-ray tomography. Oral presentation delivered at the **15th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering**, Lisbon, Portugal, March, 2018

PUBLICATIONS

Brunet, J., Pierrat, B., Adrien, J., Maire, E., Curt, N., Badel, P. A novel method for in vitro 3D imaging of dissecting pressurized arterial segments using X-ray microtomography. Exp. Mech. (2020). Under review.

Brunet, J., Pierrat, B. and Badel, P. "Review of current advances in the mechanical description and quantification of aortic dissection mechanisms." IEEE Rev. Biomed. Eng. (2020).

Brunet, J., et al. "A combined experimental-numerical lamellar-scale approach of tensile rupture in arterial medial tissue using X-ray tomography." J. Mech. Behav. Biomed. Mater. 95 (2019): 116-123.

TEACHING EXPERIENCE

Teaching Assistant, École des Mines de Saint-Étienne *2018 - 2020*
Courses: Experimental mechanics, Finite element method
Supervisor of master students - Industrial and research projects

Tutor for students in difficulty, Saint-Exupery middle school, Macon *2015 - 2016*
Courses: Mathematics and physics

ACADEMIC SERVICE

PhD student representative: Doctoral Student Board, University of Lyon *2018 - 2020*
PhD student representative: Laboratory council, SAINBIOSE (INSERM) *2018 - 2020*
President of Saint-Étienne PhD Student Club *2018 - 2019*