KAROL KULASINSKI

POSTDOCTORAL RESEARCH FELLOW

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EDUCATION

08.2012 – 10.2015	**ETH Zurich** Ph.D. Civil, Environmental and Geomatic Engineering
09.2009 – 09.2011	**University Paris Sud 11 | INSTN** M.Sc. Nuclear Physics
10.2006 – 02.2010	**Warsaw University of Technology** B.Sc. Summa cum Laude, Physics

ACADEMIC EXPERIENCE

02.2016 – PRESENT	**Lawrence Berkeley National Lab | UC Berkeley** Postdoc at Prof. Lammers group, Environmental Geochemistry.
10.2015 – 12.2015	**Swiss Federal Laboratories for Materials Science and Technology** Postdoc at Laboratory for Multiscale Studies in Building Physics.
08.2015	**Los Alamos National Lab** Visiting Scholar at Geophysics Department. Analytical and numerical modeling of water diffusion and tortuosity of porous polymeric systems.
09.2014	**Innventia AB** Visiting Scholar. Mechanical and FTIR measurements of hemicellulose.
04.2013 – 06.2013	**Northwestern University** Visiting Scholar at the Department of Mechanical Engineering. Investigation of the structure of water network in amorphous cellulose by molecular dynamics.
01.2012 – 06.2012	**Polish Academy of Sciences** Junior Researcher at Institute of Fundamental Technological Research. Investigation of thermo-mechanical coupling in shape-memory alloys (TiNi) with different strain rates.
04.2011 – 08.2011	**Texas A&M University** Intern at the Faculty of Nuclear Engineering. Computer simulation of to quantify uncertainty of water flow parameters in a nuclear reactor.
04.2010 – 06.2010	**Joint Institute for Nuclear Research** Intern at the Laboratory of Information Technologies. Modelling of Accelerator-Driven Systems in Advanced Nuclear Fuel Cycles, using Monte Carlo driven commercial code.
06.2009 – 07.2009	**CERN | Ecole des Mines de Nantes** Intern at Subatech Lab. Study on correlation and distribution of charged particles at *ALICE* experiment using Monte Carlo model, *EPOS*.

HONORS AND AWARDS

2015	Silver Medal of ETH Zurich for outstanding doctoral thesis
2009	Stipend of the French Government

2009 Individual Course of Studies at Warsaw University of Technology
2005 Stipend of the Polish Prime Minister

JOURNAL PUBLICATIONS

Kulasinski, K., Salmén, L., Derome, D. and Carmeliet, J. Moisture adsorption of glucomannan and xylan hemicelluloses. Cellulose, in review.

Kulasinski, K., Derome, D. and Carmeliet, J. Modeling of hydration effects on wood cell wall secondary layer using molecular dynamics simulations. Scientific reports, in review.

Kulasinski, K., Guyer, R., Derome, D. and Carmeliet, J. (**2015**). Water diffusion in hydrophilic systems: a stop and go process. *Langmuir* 31: 10843–10849.

Kulasinski, K., Guyer, R., Derome, D. and Carmeliet, J. (**2015**). Water adsorption in wood microfibril: role of the crystalline-amorphous cellulose. *Biomacromolecules* 16: 2972–2978.

Kulasinski, K., Guyer, R., Derome, D. and Carmeliet, J. (**2015**). Poroelastic model for adsorption-induced deformation of biopolymers obtained from molecular simulations. *Physical Review E* 92: 022605.

Kulasinski, K., Guyer, R., Keten, S., Derome, D. and Carmeliet, J. (**2015**). Impact of Moisture Adsorption on Structure and Physical Properties of Amorphous Biopolymers. *Macromolecules* 48: 2793–2800.

Kulasinski, K., Keten, S., Churakov, S., Guyer, R., Derome, D. and Carmeliet, J. (**2014**). Molecular Mechanism of Moisture-Induced Transition in Amorphous Cellulose. *ACS Macro Letters* 3: 1037–1040.

Kulasinski, K., Keten, S., Churakov, S. V., Derome, D. and Carmeliet, J. (**2014**). A comparative molecular dynamics study of crystalline, paracrystalline and amorphous states of cellulose. *Cellulose* 21: 1103–1116.

Pieczyska, E. A., Tobushi H., and Kulasinski, K. (**2013**). Development of transformation bands in TiNi SMA for various stress and strain rates studied by a fast and sensitive infrared camera. *Smart Materials and Structures* 22: 035007.

Pieczyska, E. A., Tobushi, H., Kulasinski, K. and Takeda, K. (**2012**). Impact of Strain Rate on Thermomechanical Coupling Effects in TiNi SMA Subjected to Compression. *Materials Transactions* 11: 1905-1909.

Pieczyska, E. A., Tobushi, H., Takeda, K., Stróż, D., Ranachowski, Z., Kulasinski, K., Kúdela, S. Jr., and Luckner, J. (**2012**). Martensite transformation bands studied in TiNi shape memory alloy by infrared and acoustic emission techniques. *Kovove Materialy* 50: 309-318.

CONFERENCE PRESENTATIONS

2015 8th Plant Biomechanics International Conference, Nagoya, Japan
2015 Topical Day on High-performance multiscale modelling, Duebendorf, Switzerland
2015 20th International Conference on Nonlinear Elasticity in Materials, ICNEM, Bruges, Belgium
2015 7th International Conference on Porous Media & Annual Meeting, Interpore, Padova, Italy
2014 7th International Conference on Multiscale Materials Modelling, Berkeley, CA, USA
2014 7th World Congress of Biomechanics, Boston, MA, USA
2014 The 19th International Conference on Nonlinear Elasticity in Materials, ICNEM, Frejus, France
2013 Penn State Plant Biology Symposium on cellulose synthesis, structure, matrix interactions and technology, University Park, PA, USA

2012 Monthly seminar of Institute of Fundamental Technological Research, Polish Academy of Sciences, Warsaw, Poland