

# Gregor Trefalt

Curriculum Vitæ

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| Webpage | www.gregortrefalt.com/research.html   |

## EDUCATION

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2007 - 2012

### PhD

MATERIALS CHEMISTRY

*Jožef Stefan Institute, Ljubljana, Slovenia*

2002 - 2007

### University Diploma

PHYSICAL CHEMISTRY

*University of Ljubljana, Ljubljana, Slovenia*

Studies finished with the *average grade of 9.90* (grades range: 6-10)

## POSITIONS

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CURRENT, FROM JUN 2015

### Senior Lecturer (Maître Assistant)

LABORATORY FOR COLLOID AND SURFACE CHEMISTRY

*University of Geneva, Geneva, Switzerland*

JUN 2012 - MAY 2015

### Postdoctoral Research Associate

LABORATORY FOR COLLOID AND SURFACE CHEMISTRY

*University of Geneva, Geneva, Switzerland*

APR 2012 - MAY 2012

### Postdoctoral Research Associate

ELECTRONIC CERAMICS DEPARTMENT

*Jožef Stefan Institute, Ljubljana, Slovenia*

JAN 2009 - FEB 2009

### Visiting Researcher

POWDER TECHNOLOGY LABORATORY

*École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland*

OCT 2007 - APR 2012

### PhD Student

ELECTRONIC CERAMICS DEPARTMENT

*Jožef Stefan Institute, Ljubljana, Slovenia*

## LANGUAGES AND COMPUTER SKILLS

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LANGUAGES: Slovene (native), English (fluent), French (intermediate)

COMPUTER SKILLS: Linux, Gnuplot, L<sup>A</sup>T<sub>E</sub>X, Libre Office, Windows, MS Office

PROGRAMMING: Fortran, C, C#/VS, GNU Octave, Igor, HTML, shell scripting

## AWARDS

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2014

**Oral Presentation Award**

Swiss Chemical Society Fall Meeting in Zurich

2011

**Best Poster Presentation**

Jožef Stefan International Postgraduate School Students Conference

2007

**Prešeren Award for the Diploma Thesis**

Faculty of Chemistry and Chemical Technology, University of Ljubljana

2005

**Best Student of the Year**

Faculty of Chemistry and Chemical Technology, University of Ljubljana

2004

**Best Student of the Year**

Faculty of Chemistry and Chemical Technology, University of Ljubljana

## RESEARCH INTEREST AND TEACHING ACTIVITIES

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My research is focused in the area of **colloid** and **materials chemistry**, with the emphasis on **surface interactions** across liquids. In the past, I worked in the field of colloidal processing of ceramic materials, where the control of surface forces is crucial for preparing high quality materials. Later I have focused on more fundamental aspects of surface interactions, particle aggregation, and properties of solid-liquid interfaces. In my work I have used several experimental techniques as well as modeling approaches, for example: electrokinetic measurements, **direct-force measurements based on AFM**, electron microscopy, **light scattering**, **Monte Carlo simulations**, **Poisson-Boltzmann (PB) theory**, **solid-state synthesis**, thermogravimetric analysis, measurements of ferroelectric and electromechanical properties.

My research results were published in **20+ peer-reviewed scientific papers** and presented in **40+ oral and poster** contributions at scientific meetings. I have reviewed articles for the following scientific journals: Langmuir, Colloids and Surfaces A, Industrial & Engineering Chemistry Research, Soil Science Society of America Journal.

I was involved in **university teaching** of laboratory classes in general chemistry and materials processing. I have also **guided and co-supervised undergraduate and graduate students** in their experimental work.

## KEY SCIENTIFIC PUBLICATIONS (SELECTED OUT OF 20+ PEER-REVIEWED PAPERS)

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1. Montes Ruiz-Cabello, F. J.; Moazzami-Gudarzi, M.; Elzbieciak-Wodka, M.; Maroni, P.; Labbez, C.; Borkovec, M.; Trefalt, G. Long-Ranged and Soft Interactions between Charged Colloidal Particles Induced by Multivalent Coions. *Soft Matter* **11**, 1562–1571 (2015).
2. Trefalt, G.; Montes Ruiz-Cabello, F. J.; Borkovec M. Interaction Forces, Heteroaggregation, and Deposition Involving Charged Colloidal Particles. *J. Phys. Chem. B* **118**, 6346–6355 (2014).
3. Szilágyi, I.; Trefalt, G.; Tiraferri, A.; Maroni, P. and Borkovec, M. Polyelectrolyte adsorption, interparticle forces, and colloidal aggregation. *Soft Matter* **10**, 2479–2502 (2014).
4. Trefalt, G.; Tadić, B.; Kosec, M. Formation of colloidal assemblies in suspensions for  $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3$  synthesis: Monte Carlo simulation study. *Soft Matter* **7**, 5566–5577 (2011).

5. Kuščer, D.; Stavber, G.; Trefalt, G.; Kosec, M. Formulation of an Aqueous Titania Suspension and its Patterning with Ink-Jet Printing Technology. *J. Am. Ceram. Soc.* **95**, 487–493 (2012)