

# Curriculum Vitae

## Andeĭa Œarić

Research Fellow  
Emmanuel College, University of Cambridge  
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Nationality: Croatian  
Born: August 25, 1985

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### Education:

- 2009 - 2013 Ph.D. in Chemical Physics (*with distinction*), Columbia University, New York
- 2008 - 2009 M.A. in Chemical Physics, Columbia University, New York
- 2004 - 2008 Diploma in Chemistry (*summa cum laude*), University of Zagreb, Croatia

### Research Interests:

- Soft matter, Biophysics, Self-assembly, Computer simulations, Physical approaches to biologically inspired problems, Rational design of new materials.

### Academic Appointments and Research Experience:

- 2015 - Present Emmanuel College Research Fellow, Department of Chemistry, University of Cambridge
- 2013 - Present HFSP Postdoctoral Fellow "Pathways of amyloid formation explored using coarse-grained simulations", Department of Chemistry, University of Cambridge  
Advisor: Prof. Daan Frenkel
- 2009 - 2013 Doctoral Research "Self-assembly of nanoparticles on fluid and elastic membranes", Department of Chemistry, Columbia University, New York  
Advisor: Prof. Angelo Cacciuto
- 2007 - 2008 Diploma project "Vibrational analysis of conformational preferences of capped dipeptides", Theoretical Chemistry Group, Institute Ruđer Bošković, Zagreb  
Advisor: Dr. Nađa Došlić
- 2006 - 2007 Undergraduate project "Density functional study of protonated formylmetallocenes", Faculty of Pharmacy and Biochemistry, University of Zagreb  
Advisor: Prof. Valerije Vrćek, Prof. Michael Bühl (University of St. Andrews)

### Teaching Experience:

- Supervisor for the course "Statistical Mechanics", University of Cambridge (2014 - Present)
- Supervisor for the course "Soft Matter", University of Cambridge (2013 - Present)
- Physical chemistry tutor, Columbia University (2009 - 2013)
- Teaching assistant, Columbia University (2008 - 2010)  
"Physical Chemistry II: Thermodynamics and Statistical Mechanics" (2009, 2010)  
"General Chemistry" (2009)  
"General Chemistry Laboratory" (2008)
- Preparing Croatian team for the International Chemistry Olympiad (2004-2008)

**Student mentoring:**

- 2015 - Present Part III (M.Sci) students Alexandru Paraschiv and Tim Burd, University of Cambridge  
Project: *Computational study of supramolecular self-assembly*
- 2014 - 2015 Erasmus Placement student Domagoj Fijan, University of Cambridge  
Project: *Thermo-polarisation effect in water*
- 2012 - 2013 Graduate research student Joe Napoli, Columbia University  
Project: *Collapsing nanoparticle-laden nanotubes*
- 2012 - 2013 Graduate student Stewart Mallory, Columbia University  
Project: *Anomalous thermomechanical properties of fluids of self-propelled particles*

**Publications:**

14. A. Šarić, G. Meisl, A. K. Buell, T. C. T. Michaels, T. P. J. Knowles and D. Frenkel, *Physical determinants for self-replication of protein fibrils*, Submitted (2015).
13. A. Šarić, Y. C. Chebaro, T. P. J. Knowles and D. Frenkel, *Crucial role of non-specific interactions in amyloid nucleation*. *Proc. Natl. Acad. Sci. U.S.A.* 111, 17869 (2014).  
(Highlighted on the HFSP website).
12. S. A. Mallory, A. Šarić, C. Valeriani and A. Cacciuto, *Anomalous thermomechanical properties of fluids of self-propelled particles*. *Phys. Rev. E* 89, 052303 (2014).
11. B. M. Mognetti<sup>§</sup>, A. Šarić<sup>§</sup>, S. Angioletti-Uberti, A. Cacciuto, C. Valeriani and D. Frenkel, *Living clusters and crystals from low densities suspensions of active colloids*. *Phys. Rev. Lett.* 111, 245702 (2013).  
(Editor's suggestion, highlighted in P. Ball, *Physics* 6, 134 (2013)).
10. J. A. Napoli, A. Šarić and A. Cacciuto, *Collapsing nanoparticle-laden nanotubes*, *Soft Matter* 9, 8881 (2013).
9. A. Šarić and A. Cacciuto, *Self-assembly of nanoparticles on fluid and elastic membranes*, *Soft Matter* 9, 6677 (2013).  
(Review article, part of themed collection "Emerging Investigators").
8. A. Šarić and A. Cacciuto, *Mechanism of membrane tube formation induced by adhering nanocomponents*, *Phys. Rev. Lett.* 109, 188101 (2012).  
(Cover paper of the weekly issue, highlighted in APS Physics Synopsis.)
7. A. Šarić and A. Cacciuto, *Fluid membranes can drive linear aggregation of adsorbed spherical nanoparticles*, *Phys. Rev. Lett.* 108, 118101 (2012).  
(Editor's suggestion.)
6. A. Šarić and A. Cacciuto, *Soft elastic surfaces as a platform for particle self-assembly*. *Soft Matter* 7, 7552 (2011).
5. A. Šarić and A. Cacciuto, *Particle self-assembly on soft elastic shells*, *Soft Matter* 7, 1874 (2011).
4. A. Šarić<sup>§</sup>, B. Bozorgui<sup>§</sup>, and A. Cacciuto, *Packing of soft asymmetric dumbbells*, *J. Phys. Chem. B* 115, 7182 (2011).  
(On the cover of the special issue "Clusters in Complex Fluids".)
3. A. Šarić, J. C. Pàmies, and A. Cacciuto, *Effective elasticity of a flexible filament bound to a deformable cylindrical surface*, *Phys. Rev. Lett.* 104, 226101 (2010).
2. A. Šarić, T. Hrenar, M. Mališ, and N. Došlić, *Quantum mechanical study of secondary structure formation in protected dipeptides*, *Phys. Chem. Chem. Phys.* 12, 4678 (2010).

1. A. Šarić, V. Vrčec and M. Bühl, *Density Functional Study of Protonated Formylmetallocenes*, *Organometallics* 27, 394 (2008).

(§ shared authorship)

#### In Preparation:

- M. Šimunović, A. Šarić, M. Henderson, V. Unger, K.Y. Lee, P. Bassereau and G.A. Voth: *Extremely long-range interactions between lines of protein polymers on biomembranes*. In preparation, (2015).

#### Awards:

- Sir Alan Wilson Research Fellowship in biological and medicinal sciences, Emmanuel College, Cambridge (2014 - 2017)
- Human Frontier Science Program Cross-disciplinary postdoctoral fellowship (2013 - 2016)
- The Hammett Award to the outstanding Ph.D. Student, Columbia University (2013)
- Rutgers Fellowship for exemplifying academic excellence, Columbia University (2009)
- Medal of Department of Chemistry for recognition of achievements in studies, Zagreb (2008)
- Rectors' award, University of Zagreb (2008)
- Fellowship of the Rotary Club Zagreb (2007 - 2008)
- Fellowship of the City of Zagreb (2006, 2008)
- Fellowship of the Croatian Ministry of Science (2004, 2006)
- Bronze medal at the International Chemistry Olympiad, Kiel (2004)

#### Invited talks and participation in Workshops, Schools and Conferences:

- Royal Society Meeting on Nucleation, Chicheley, UK (2016): Invited talk
- Institute for the Physics of Living Systems, UCL, UK (2015): Invited talk
- BP Institute Seminar Series, University of Cambridge (2015): Invited talk
- Gordon Research Seminar, New London, USA (2015): Invited talk
- European Biophysics Congress, Dresden, Germany (2015): Contributed talk and poster presentation
- CECAM workshop, "Physics of Protein Aggregation", Lausanne, Switzerland (2015): Contributed talk and poster presentation
- University of Dundee, The Division of Computational Biology (2015): Invited talk
- Ludwig Maximilian University Munich, Department of Physics (2014): Invited talk
- Computational condensed matter: advances and challenges, Whitehaven, UK (2014): Contributed talk
- CECAM workshop, "Understanding the interaction of nano-sized synthetic materials with biological membranes", Lausanne, Switzerland (2014): Invited talk
- ACS Colloid & Surface Science Symposium, Philadelphia, USA (2014): Contributed talk and Poster presentation
- Brandeis Materials Research Science and Engineering Center Seminar, Boston, USA (2012): Invited talk
- Enrico Fermi Summer School of Physics, Varenna, Italy (2012): Poster presentation
- Boulder Summer School of Hydrodynamics, Colorado, USA (2011): Oral and Poster presentation

- Physical Chemistry Seminar Columbia University, New York, USA (2011): Oral presentation
- Gotham-Metro Condensed Matter Meeting, New York Academy of Sciences (2009 and 2010): Poster presentation
- 240th American Chemical Society National Meeting & Exposition, Boston, USA (2010): Poster presentation
- 5th Vienna Biocenter PhD Symposium “Molecules to Mind”, Vienna, Austria (2007): Attendance

**Professional activities:**

- Referee: Soft Matter, Physical Review E, PLOS One, Journal of Polymer Physics B, Journal of Chemical & Engineering Data

**Outreach Activities:**

- Summer School of Science, Croatia: project leader, lecturer, organiser (2005-2013)
- Society for Out of Frame Education, Croatia: co-founder, board member (2010-2011), fundraising chair (2010-2012)
- Girls' Science Day at Columbia University (2009-2013)
- Open day of Chemistry Department, University of Zagreb (2008, 2009)
- Festival of Science, Zagreb (2007, 2008)

**Languages:**

- English, Croatian: fluent, German: moderate, French: basic