

# Peter Košovan – Curriculum Vitae

## Personal and contact information

11.09.2023

Born 19. July 1981 in Námestovo, Slovakia  
Home U Dubu 402, 252 31 Všenory, Czechia  
Work Department of Physical and Macromolecular Chemistry  
Faculty of Science, Charles University  
Hlavova 8, 128 43 Praha 2, Czechia  
Phone +420-221-95-1029 (work) +420-608-003-990 (mobile)  
E-mail [peter.kosovan@natur.cuni.cz](mailto:peter.kosovan@natur.cuni.cz)  
Identifiers ORCID 0000-0002-6708-3344, Researcher ID A-1945-2008  
Scientometric H-index 21, 57 publications, 1044 citations (Web of Science)



## Employment and secondments

since Oct 2022 Associate professor (docent), Faculty of Science, Charles University, Prague  
Jan 2013 – Sep 2022 Assistant professor, Faculty of Science, Charles University, Prague  
Jan 2010 – Jan 2013 Postdoc at Institute for Computational Physics, University of Stuttgart, DE, reference: Prof. C. Holm ([holm@icp.uni-stuttgart.de](mailto:holm@icp.uni-stuttgart.de))  
Jan – Feb 2008 Institut Pluridisciplinaire de Recherche sur l'Environnement et les Matériaux, Université de Pau, FR; Secondment within the Marie Curie RTN *Polyamphi*, reference: Dr. O. V. Borisov ([oleg.borisov@univ-pau.fr](mailto:oleg.borisov@univ-pau.fr))  
Aug–Dec 2007 Dept. of Physical Chemistry and Colloid Science, Wageningen University, NL; Secondment within the Marie Curie RTN *Polyamphi*, reference: Prof. F. Leermakers ([frans.leermakers@wur.nl](mailto:frans.leermakers@wur.nl))  
Jan 2001–Dec 2003 Research assistant at Institute of Inorganic Chemistry, Czech Academy of Sciences, Řež, CZ; reference: Dr. Josef Buršík ([bursik@iic.cas.cz](mailto:bursik@iic.cas.cz))

## Education

2005–2009 Ph.D. in Macromolecular chemistry, Faculty of Science, Charles University, Prague, CZ; supervisor: Prof. K. Procházka ([prochaz@natur.cuni.cz](mailto:prochaz@natur.cuni.cz))  
2000–2005 Master of Science (Mgr.) in Macromolecular chemistry, Faculty of Science, Charles University, Prague, CZ; supervisor: Prof. K. Procházka  
1995–2000 Bilingual English-Slovak Grammar School in Sučany, Slovakia

## Awards and prizes

- Outstanding reviewer for Soft Matter in 2020 (recognition by editors of the journal)
- Award of the dean of Faculty of Science of the Charles University for young researchers (2016)
- Award of the Czech ministry of education, youth and sports for outstanding achievements in the field of Macromolecular Chemistry (awarded for Ph.D. thesis, 2010).

## Research interests

- Computer simulations and mean field modeling of polymer systems
- Acid-base equilibria in macromolecular systems
- Swelling and partitioning of solutes in polymer solutions and gels
- Phase separation of charged polymers, colloids, coacervates and proteins

## Research projects as principal investigator

---

Jan - Aug 2022	Simulations of protein solutions in dialysis and dia-/ultra-filtration: The role of electrostatic interactions, pHand Donnan partitioning; Boehringer Ingelheim
2021–2023	Simulations of reaction equilibria in polymer systems - method development and applications; Czech Science Foundation / DFG, project 21-31978J
2019–2021	Controlling encapsulation and release by charge regulation and multivalent interactions with supramolecular polymer carriers; Czech Science Foundation, project 19-10429S
2017–2019	Multiscale modeling of responsive polymer gels; Czech Science Foundation, project 17-02411Y
2013–2015	Interactions and dynamics in polymeric nanostructures; Ministry of education, youth and sports of the Czech Republic, project LK21302
2006–2009	Molecular Dynamics Simulations of Annealed Polyelectrolytes; Grant Agency of the Czech Academy of Sciences of the Czech Republic, project KJB401110701
2006–2009	Persistence length of polyelectrolytes, Grant Agency of the Charles University, project No. 43-257-269

## Supervised students (year of defense)

---

PhD	R. Lunkad (2023), S. Pineda (expected: 2025), I. Padhee (expected: 2027),
Master	J. Kubečka (2017), R. Staňo (2020), M. Nejedlá (expected: 2024)
Bachelor	J. Kubečka (2015), R. Staňo (2018), M. Nejedlá (2022), V. Keprta, J. Krieger (expected 2024)

## Teaching experience (selection)

---

since 2022	Physical Chemistry I (Chemical Thermodynamics), Lecture + Tutorial, Charles University
since 2019	Physical Chemistry for International Students, Lecture, Charles University
since 2017	Physical Chemistry of Macromolecules, Lecture, Charles University
since 2013	Statistical Thermodynamics and Molecular Simulations, Lecture + Tutorial, Charles University
2010 – 2013	Simulation methods in Physics I and II, Tutorial, University of Stuttgart
2006, 2009	Physical Chemistry II (Chemical kinetics & Electrochemistry), Tutorial, Charles Univ.

## Language skills

---

English	advanced (CEFR level C1, CAE exam, score A)
German	advanced (B2/C1 self-assessment)
Russian	lower-intermediate (B1/B2 self-assessment)
French	beginner (B1 self-assessment)
Polish	advanced (passive C1, active B2 because of lacking practice, self-assessment)
Other	Slovak (mother tongue), Czech (2nd mother tongue)

## Computer skills

---

python, C, bash, TCL, T<sub>E</sub>X, L<sup>A</sup>T<sub>E</sub>X, Linux, (Ubuntu, OpenSuse, basic system administration), Windows, standard office tools

## Hobbies and interests

---

Rock climbing, mountaineering, skiing, cycling; learning languages and any kind of interesting science.

## Selected Publications

---

- [1] Roman Staňo, Jéré J. Van Lente, Saskia Lindhoud, and Peter Košov. Sequestration of Small Ions and Weak Acids and Bases by a Polyelectrolyte Complex Studied by Simulation and Experiment. *Macromolecules*, 57(3):1383–1398, January 2024.
- [2] David Beyer, Peter Košov, and Christian Holm. Explaining Giant Apparent  $pK_a$  Shifts in Weak Polyelectrolyte Brushes. *Physical Review Letters*, 131(16):168101, October 2023.
- [3] Raju Lunkad, Fernando L. Barroso da Silva, and Peter Košov. Both charge-regulation and charge-patch distribution can drive adsorption on the wrong side of the isoelectric point. *Journal of the American Chemical Society*, 144(4):1813–1825, 2022.
- [4] Raju Lunkad, Philip Biehl, Anastasiia Murmiliuk, Pablo M. Blanco, Peter Mons, Miroslav Štěpánek, Felix H. Schacher, and Peter Košov. Simulations and Potentiometric Titrations Enable Reliable Determination of Effective  $pK_a$  Values of Various Polyzwitterions. *Macromolecules*, 55(17):7775–7784, September 2022.
- [5] Jonas Landsgesell, David Beyer, Pascal Hebbeker, Peter Košov, and Christian Holm. The pH-Dependent Swelling of Weak Polyelectrolyte Hydrogels Modeled at Different Levels of Resolution. *Macromolecules*, 55(8):3176–3188, April 2022.
- [6] Roman Staňo, Peter Košov, Andrea Tagliabue, and Christian Holm. Electrostatically Cross-Linked Reversible Gels—Effects of pH and Ionic Strength. *Macromolecules*, 54(10):4769–4781, 2021.
- [7] Raju Lunkad, Anastasiia Murmiliuk, Pascal Hebbeker, Milan Boublík, Zdeněk Tošner, Miroslav Štěpánek, and Peter Košov. Quantitative prediction of charge regulation in oligopeptides. *Molecular Systems Design & Engineering*, 6(2):122–131, 2021.
- [8] Jonas Landsgesell, Pascal Hebbeker, Oleg Rud, Raju Lunkad, Peter Košov, and Christian Holm. Grand-reaction method for simulations of ionization equilibria coupled to ion partitioning. *Macromolecules*, 53(8):3007–3020, Apr 2020.
- [9] Jonas Landsgesell, Lucie Nová, Oleg Rud, Filip Uhlík, David Sean, Pascal Hebbeker, Christian Holm, and Peter Košov. Simulations of ionization equilibria in weak polyelectrolyte solutions and gels. *Soft Matter*, 15(6):1155–1185, 2019.
- [10] Lucie Nová, Filip Uhlík, and Peter Košov. Local pH and effective  $pK_A$  of weak polyelectrolytes - insights from computer simulations. *Phys. Chem. Chem. Phys.*, 19:14376–14387, 2017.
- [11] Peter Košov, Tobias Richter, and Christian Holm. Modelling of polyelectrolyte gels in equilibrium with salt solutions. *Macromolecules*, 48:7698–7708, 2015.