

Curriculum Vitae

Rafał Konefal

Date of birth: 01.11.1987
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Work experience:



01.08.2012 – present: Institute of Macromolecular Chemistry Academy of Sciences of the Czech Republic in Prague, Department of NMR Spectroscopy; Institute of Macromolecular Chemistry ASCR v.v.i.; Heyrovského nám.2; 162 06 Praha 6, Czech Republic

Other professional experience:

01.10.2011-31.07.2012: Trainee / Invited Scientist at the Department of NMR Spectroscopy, Institute of Macromolecular Chemistry Academy of Sciences of the Czech Republic in Prague.

01.09.2010-30.09.2010: Practical training at the Department of General Chemistry and Electrochemistry, Faculty of Chemistry, Rzeszów University of Technology.

Department of General Chemistry and Electrochemistry Rzeszów University of Technology; al. Powstańców Warszawy 12; 35-959 Rzeszów, Poland

30.06.2008-27.07.2008: Practical training at Zakłady Metalowe DEZAMET. Zakłady Metalowe DEZAMET Joint Stock Company; ul. Szybowskiego 1; 39-460 Nowa Dęba, Poland

Education:

2012-present **Charles University in Prague, Faculty of Science, Czech Republic**
Field of study: Physical Chemistry (PhD student)
Title of PhD thesis: „Stimuli-responsive polymers studied by NMR spectroscopy”

2011-2012 **Institute of Macromolecular Chemistry of the ASCR, v.v.i., Prague, Czech Republic**
UNESCO/IUPAC Postgraduate Course in Polymer Science

2005-2011 **Rzeszów University of Technology, Faculty of Chemistry, Poland**
Field of study: Chemical Technology (Chemical and Bioprocess Engineering)
Title of Master thesis: “Reactivity of amino groups of PAMAM dendrimers”
Degree obtained: magister inżynier (M.Sc. Eng.)

Language skills:

Polish - Native language
English - IELTS Score: 6.5
Czech - Limited working proficiency

Active participation in 11 international conferences, and co-author of other 19 presentations.

List of publications

1. S.Petrova, E. Jäger, R. Konefał, A. Jäger, C. G. Venturini, J. Spěváček, E. Pavlova, P. Štěpánek „Novel poly(ethylene oxide monomethyl ether)-*b*-poly(ϵ -caprolactone) diblock copolymers containing a pH-acid labile ketal group as a block linkage”, *Polymer Chemistry*, 2014, 5, 3884-3893.
2. V. Patsula, E. Petrovský, J. Kovářová, R. Konefał, D. Horák „Monodisperse superparamagnetic nanoparticles by thermolysis of Fe(III) oleate and mandelate complexes”, *Colloid and Polymer Science*, 2014, 292, 9, 2097-2110.
3. L. Starovoytova, J. Šťastná, A. Štuncová, R. Konefal, J. Dybal, N. Velychkivska, M. Radecki, L. Hanyková „Additive effects on phase transition and interactions in poly(vinyl methyl ether) solutions”, *Polymers*, 7,12 (2015), 2572-2583
4. B. Strachota, L. Matejka, A. Zhigunov, R. Konefal, J. Spevacek, J. Dybal, R. Puffr „Poly(N-isopropylacrylamide)-clay based hydrogels controlled by the initiating conditions: evolution of structure and gel formation” *Soft Matter*, 11, 48 (2015), 9291-9306
5. E. Jäger, R. K Donato, M. Perchacz, A. Jäger, F. Surman, A. Höcherl, R. Konefał, K. Donato, C. G. Venturini, V. Bergamo, H. S. Schrekker, A. M. Fuentesfri, M. G. Raucci, L. Ambrosio, P. Stepanek “Biocompatible succinic acid-based polyesters for potential biomedical applications: fungal biofilm inhibition and mesenchymal stem cell growth” *RSC Advances*, 5, 104 (2015), 85756-85766
6. M. Rabyk, M. Hruby, M. Vetrik, J. Kucka, V. Proks, M. Parizek, R. Konefal, P. Krist, D. Chvatil, L. Bacakova, M. Slouf, P. Stepanek “Modified glycogen as construction material for functional biomimetic microfibers” *Carbohydrate Polymers*, 152, 2016, 271-279
7. S. Petrova, D. Klepac, R. Konefał, S. Kereiche, L. Kováčik, S. K. Filippov “Synthesis and solution properties of PCL-*b*-PHPMA diblock copolymers containing stable nitroxyl radicals” *Macromolecules*, 49, 15 (2016), 5407-5417
8. R. Konefał, J. Spěváček, E. Jäger, S. Petrova “Thermoresponsive behaviour of terpolymers containing poly(ethylene oxide), poly(2-ethyl-2-oxazoline) and poly(ϵ -caprolactone) blocks in aqueous solutions: an NMR study” *Colloid and Polymer Science*, 294, 11 (2016), 1717-1726
9. J. Spěváček, R. Konefał, E. Čadová “NMR study of thermoresponsive block copolymer in aqueous solution” *Macromolecular Chemistry and Physics*, 217, 12 (2016), 1370-1375
10. V. Patsula, L. Kosinová, M. Lovrić, L. Ferhatovic Hamzić, M. Rabyk, R. Konefał, A. Paruzel, M. Šlouf, V. Herynek, S. Gajović, D. Horák “Superparamagnetic Fe₃O₄ nanoparticles: synthesis by thermal decomposition of iron(III) glucuronate and application in magnetic resonance imaging” *ACS Applied Materials & Interfaces*, 8, 11 (2016), 7238-7247
11. O. Sedlacek, P. Cernoch, J. Kucka, R. Konefał, P. Stepanek, M. Vetrik, T. P. Lodge, M. Hruby “Thermoresponsive polymers for nuclear medicine: which polymer is the best?” *Langmuir*, 32, 24 (2016), 6115-6122
12. E. Jäger, A. Höcherl, O. Janoušková, A. Jäger, M. Hruby, R. Konefał, M. Netopilik, J. Panek, M. Slouf, K. Ulbrich, P. Stepanek “Fluorescent boronate-based polymer nanoparticles with reactive oxygen species (ROS)-triggered cargo release for drug-delivery applications” *Nanoscale*, 8, 13 (2016), 6958-6963
13. J. Spěváček, R. Konefał, J. Dybal „Temperature-induced phase transition in aqueous solutions of poly(N-isopropylacrylamide)-based block copolymer” *Macromolecular Symposia*, 369, 1 (2016), 92-96
14. J. Trousil, S. K. Filippov, M. Hrubý, T. Mazel, Z. Syrová, D. Cmarko, S. Svidenská, J. Matějková, L. Kováčik, B. Porsch, R. Konefał, R. Lund, B. Nyström, I. Raška, P. Štěpánek “System with embedded drug release and nanoparticle degradation sensor showing efficient rifampicin delivery into macrophages” *Nanomedicine: Nanotechnology, Biology and Medicine*, 13, 1 (2017), 307-315
15. B. Strachota, L. Matějka, A. Sikora, J. Spěváček, R. Konefał, A. Zhigunov, M. Šlouf “Insight into the cryopolymerization to form poly(N-isopropylacrylamide)/clay macroporous gel. Structure and phase evolution” *Soft Matter*. 13, 6 (2017), 1244-1256.

16. A. Höcherl, E. Jäger, A. Jäger, M. Hruby, R. Konefal, O. Janoušková, J. Spevacek, Y. Jiang, P. W. Schmidt, T. P. Lodge, P. Stepanek, "One-pot synthesis of reactive oxygen species (ROS)-self-immolative polyoxalate prodrug nanoparticles for hormone dependent cancer therapy with minimized side effects," *Polym. Chem.*, 2017,8, 1999-2004
17. H. Mackova, Z. Plichta, H. Hlidkova, O. Sedlacek, R. Konefal, Z. Sadakbayeva, M. Duskova-Smrckova, D. Horák, S. Kubinova, "Reductively degradable poly(2-hydroxyethyl methacrylate) hydrogels with oriented porosity for tissue engineering applications", *ACS Appl. Mater. Interfaces*, 9, 12 (2017), 10544-10553
18. P. Bojarová, P. Chytil, B. Mikulová, L. Bumba, R. Konefal, H. Pelantová, J. Krejzová, K. Slamova, L. Petrásková, L. Kotrchová, J. Cvačka, T. Etrych, V. Kren, "Glycan-decorated HPMA copolymers as high-affinity lectin ligands", *Polym. Chem.*, 8, 13 (2017), 1999-2004
19. M. Perchacz, R. Donato, L. Seixas, A. Zhigunov, R. Konefal, M. Serkis-Rodzeń, H. Benes, "Ionic liquid-silica precursors via solvent-free sol-gel process and their application in epoxy-amine network: a theoretical-experimental study", *ACS Applied Materials & Interfaces*, 9, 19, (2017), 16474-16487
20. J. Brus, M. Urbanová, J. Czernek, M. Pavelkova, K. Kubova, J. Vyslouzil, S. Abbrent, R. Konefal, J. Horsky, D. Vetchy, J. Vyslouzil, P. Kulich, "Structure and dynamics of alginate gels cross-linked by polyvalent ions probed via solid state NMR spectroscopy", *Biomacromolecules*, 18, 8, (2017), 2478-2488
21. M. Holubova, R. Konefał, Z. Moravkova, A. Zhigunov, J. Svoboda, O. Pop-Georgievski, J. Hromadkova, O. Groborz, P. Stepanek, M. Hruby, "Carbon nanospecies affecting amyloid formation", *RSC Advances*, 7, 85, (2017), 53887-53898
22. J. Spěvák, R. Konefał, J. Dybal, E. Čadová, J. Kovářová: Thermoresponsive behavior of block copolymers of PEO and PNIPAm with different architecture in aqueous solutions: a study by NMR, FTIR, DSC and quantum-chemical calculations. *European Polymer Journal*, 2017, 94, 471-483.
23. M. Studenovský, L. Sivak, O. Sedlacek, R. Konefal, V. Horkova, T. Etrych, M. Kovar, B. Rihova, M. Sirova, "Polymer nitric oxide donors potentiate the treatment of experimental solid tumours by increasing drug accumulation in the tumour tissue", *Journal of Controlled Release*, 269, (2018), 214-224
24. A. Jäger, E. Jäger, F. C. Giacomelli, F. Nallet, M. Steinhart, J.-L. Putaux, R. Konefal J. Spěvák, K. Ulbrich, P. Štěpánek, "Structural changes on polymeric nanoparticles induced by hydrophobic drug entrapment", *Colloids and Surfaces A-Physicochemical and Engineering Aspects*, 538, (2018), 238-249
25. R. Konefał, J. Spěvák, P. Černoš: Thermoresponsive poly(2-oxazoline) homopolymers and copolymers in aqueous solutions studied by NMR spectroscopy and dynamic light scattering. *European Polymer Journal* 2018, in production