

List of publications PROF. DR. SABINE FUCHS

(Status: March 2020)

Articles (peer-reviewed)

22. T. Mayer-Gall, D. Plohl, L. Derksen, D. Lauer, P. Neldner, W. Ali, S. Fuchs, J. S. Gutmann, K. Opwis: «A green water-soluble cyclophosphazene as a flame retardant finish for textiles», *Molecules* **2019**, *24*, 3100-3123.
21. J. Wagner, P. Deglmann, S. Fuchs, M. Ciesielski, C. Fleckenstein, M. Döring: «A flame retardant synergism of organic disulfides and phosphorous compounds», *Polym. Degr. Stability* **2016**, *129*, 63-76.
20. U. Braun, P. Eisentraut, S. Fuchs, P. Deglmann: «Sulphurous additives for polystyrene: Influencing decomposition behaviour in the condensed phase», *J. Appl. Polym. Sci.* **2015**, *132*, 41665-41665.
19. V. L. Furer, A. E. Vandyukov, S. Fuchs, J. P. Majoral, A. M. Caminade, V. I. Kovalenko: «DFT study of the IR and Raman spectra of a fluorescent dendron built from cyclotriphosphazene core», *Vibr. Spectrosc.* **2014**, *73*, 28-36.
18. V. L. Furer, A. E. Vandyukov, S. Fuchs, J. P. Majoral, A. M. Caminade, V. I. Kovalenko: «DFT study of Raman spectra of hexakis(4-N'-(di(4-oxyphenethyl-amino)-(thio)phosphonyl)-N'-methyl-diazobenzene)cyclotriphosphazene», *Spectrochim. Acta A Mol. Biomol. Spectrosc.* **2014**, *128*, 212-217.
17. V. L. Furer, A. E. Vandyukov, S. Fuchs, J. P. Majoral, A. M. Caminade, V. I. Kovalenko: «DFT study of Raman spectra of phosphorus-containing dendrons built from cyclotriphosphazene core with terminal carbamate and ester groups», *Spectrochim. Acta A Mol. Biomol. Spectrosc.* **2014**, *120*, 195-200.
16. V. L. Furer, A. E. Vandyukov, S. Fuchs, J. P. Majoral, A. M. Caminade, V. I. Kovalenko: «DFT study of Raman spectra of phosphorus-containing dendrons built from cyclotriphosphazene core», *J. Molec. Struct.* **2013**, *1052*, 197-204.
15. D. Riegert, A. Pla-Quintana, S. Fuchs, R. Laurant, C.-O. Turrin, C. Duhayon, J. P. Majoral, A. Chaumonnot, A.-M. Caminade: «Diversified Strategies for the Synthesis of Bifunctional Dendrimeric Structures», *Eur. J. Org. Chem.* **2013**, *24*, 5414-5422.
14. A. Pla-Quintana, S. Fuchs, R. Laurent, C. O. Turrin, C. Duhayon, J. P. Majoral, A. Chaumonnot, A. M. Caminade: «Diversified Strategies for the Synthesis of Bifunctional Dendrimeric Structures», *Eur. J. Org. Chem.* **2013**, 5414-5422.
13. V. L. Furer, A. E. Vandyukov, S. Fuchs, J. P. Majoral, A. M. Caminade, V. I. Kovalenko: «DFT study of structure, IR and Raman spectra of the first generation dendrimer built from cyclotriphosphazene core with terminal 4-oxyphenethylamino groups», *J. Molec. Struct.* **2012**, *1026*, 17-22.
12. V. L. Furer, A. E. Vandyukov, S. Fuchs, J. P. Majoral, A. M. Caminade, V. I. Kovalenko: «DFT study of structure, IR and Raman spectra of the first generation dendron built from cyclotriphosphazene core with terminal carbamate and ester groups», *Spectrochimica Acta A Mol. Biomol. Spectrosc.* **2012**, *91*, 97-105.
11. A. Hameau, S. Fuchs, R. Laurent, J.-P. Majoral, A.-M. Caminade: «Synthesis of dye/fluorescent functionalized dendrons based on cyclotriphosphazene», *Beilstein J. Org. Chem.* **2011**, *7*, 1577-1583.
10. V. L. Furer, I. I. Vandyukova, A. E. Vandyukov, S. Fuchs, J.-P. Majoral, A.-M. Caminade, V. I. Kovalenko: «DFT study of structure, IR and Raman spectra of the

- fluorescent "Janus" dendron built from cyclotriphosphazene core», *J. Molec. Struct.* **2011**, *1005*, 25-30.
9. V. L. Furer, I. I. Vandyukova, A. E. Vandyukov, S. Fuchs, J. P. Majoral, A. M. Caminade, V. I. Kovalenko: «Vibrational spectra study of fluorescent dendrimers built from the cyclotriphosphazene core with terminal dansyl and carbamate groups», *Spectrochimica Acta A Mol. Biomol. Spectrosc.* **2011**, *79*, 462-470.
 8. V. L. Furer, I. I. Vandyukova, A. E. Vandyukov, S. Fuchs, J.-P. Majoral, A. M. Caminade, V. I. Kovalenko: «DFT study of structure, IR and Raman spectra of the first generation dendron built from cyclotriphosphazene core», *J. Molec. Struct.* **2011**, *987*, 144-151.
 7. V. L. Furer, I. I. Vandyukova, A. E. Vandyukov, S. Fuchs, J. P. Majoral, A. M. Caminade, V. I. Kovalenko: «DFT calculations of structure and vibrational spectra of dendron built of cyclotriphosphazene core with terminal carbamate and ester groups», *Vibr. Spectrosc.* **2010**, *54*, 21-29.
 6. V. L. Furer, I. I. Vandyukova, A. E. Vandyukov, S. Fuchs, J.-P. Majoral, A.-M. Caminade, V. I. Kovalenko: «DFT analysis of vibrational spectra of phosphorous-containing dendrons built from cyclotriphosphazene core», *J. Molec. Struct.* **2009**, *932*, 97-104.
 5. S. Fuchs, A. Pla-Quintana, S. Mazères, A.-M. Caminade, J.-P. Majoral: «Cationic and Fluorescent „Janus“ Dendrimers», *Org. Letters* **2008**, *10*, 4751-4754.
 4. S. Fuchs, H. Otto, S. Jehle, P. Henklein, A. D. Schlüter: «Fluorescent dendrimers with a peptide cathepsin B cleavage site for drug delivery applications», *Chem. Commun.* **2005**, 1830-1832.
 3. L. Metullio, M. Ferrone, A. Coslanich, S. Fuchs, M. Fermeiglia, M. S. Paneni, S. Prici: «Polyamidoamine (Yet Not PAMAM) Dendrimers as Bioinspired Materials for Drug Delivery: Structure-Activity Relationships by Molecular Simulations», *Biomacromolecules*, **2004**, *5*, 1371-1378.
 2. S. Fuchs, T. Kapp, H. Otto, T. Schöneberg, P. Franke, R. Gust, A. D. Schlüter: «A Surface-Modified Dendrimer Set for Potential Application as Drug Delivery Vehicles: Synthesis, In Vitro Toxicity, and Intracellular Localization», *Chem. Eur. J.* **2004**, *10*, 1167-1192.
 1. S. Fuchs, T. Kapp, H. Otto, P. Franke, R. Gust, A. D. Schlüter: «Synthesis of a New Set of Poly(amido-amine) Dendrimers with Potential Application as Carrier Molecules for Anticancer Therapeutics», *Polym. Mater. Sci. Eng.* **2003**, *88*, 422-423.

Invited talks & presentations at conferences (selection)

- T. von Zons, S. Fuchs: «From synthesis to application: Investigations on structure-activity relationships of functionalized cyclotriphosphazenes as flame retardants in high impact polystyrene», *Ecole Nationale Supérieure de Chimie*, Jan. **2020**, *Université de Lille*, Villeneuve d'Ascq, France
- M. Luksin, S. Fuchs: «Novel approaches towards halogen-free flame retardant polystyrene foams: Comparative investigations on the synergism of organo-phosphorous flame retardants with disulfides», *3rd Asia-Oceania Symposium on Fire Safety Materials Science and Engineering (AOFSM'3)* **2019**, Shanghai, China
- M. Luksin, P. Deglmann, S. Fuchs: «Novel approaches towards halogen-free flame retardant polystyrene foams: Investigations on the interplay of organic phosphates and phosphonates with disulfides», *33rd Polymer Degradation Discussion Group (PDDG) Meeting* **2019**, Malta

- M. Luksin, S. Fuchs: «Novel approaches towards halogen-free flame retardant styrenic polymers», *COVESTRO Deutschland AG*, Sep. **2019**, Leverkusen, Germany.
- S. Fuchs: «An old acquaintance in new accompaniment: *Surprising flame retardant effects in polystyrene and polypropylene by use of synergistic combinations of organo-phosphorous and organo-sulfurous compounds*», *Colloquium of the Deutsches Textilforschungszentrum Nord-West gGmbH*, Jun. **2019**, Krefeld, Germany
- S. Fuchs, N. Hemker, U. Braun: «Microplastics generation: Degradation analysis of polypropylene with different antioxidants under marine conditions», *Fachforum Ressourcen - Graduierteninstitut NRW: Kunststoffe und Nachhaltigkeit*, Nov. **2018**, Chempark Leverkusen, Germany
- S. Fuchs, N. Hemker, U. Braun: «Comparative investigations on the degradation behavior of polypropylene formulations containing different antioxidants under marine conditions», *Modification, Degradation and Stabilization of Polymers (MoDeSt) Conference 2018*, Tokyo, Japan
- S. Fuchs, U. Braun, J. Wagner, M. Döring: «Degradation behaviour of polystyrene compounds containing organic disulfides and organic phosphates», *32nd Polymer Degradation Discussion Group (PDDG) Meeting 2017*, Taormina, Italy
- S. Fuchs, U. Braun, M. Döring, *et al.*: «From organo-phosphorous and organo-sulfurous compounds to flame-retarded polymers: Novel concepts for polystyrene additivation», *Modification, Degradation and Stabilization of Polymers (MoDeSt) Conference 2016*, Cracow, Poland
- S. Fuchs, U. Braun: «From organo-phosphorous and organo-sulfurous compounds to non-flammable polymers» *Colloquium Macromolecular Chemistry – Organic Chemistry 2016*, Department Chemistry - Biology, University of Siegen, Germany.

Poster presentations

- M. Luksin, P. Frank, U. Jonas, S. Fuchs: «Novel flame retardant concepts for styrenic polymers», *Makromolekulares Kolloquium Freiburg 2020*, Freiburg im Breisgau, Germany
- E. Buchholz, U. Jonas, S. Baldermann, A. Strunk-Westermann, S. Fuchs: «Towards the preparation of novel polymers with permanent antifogging properties for use in greenhouse and food packaging applications», *33rd Polymer Degradation Discussion Group (PDDG) Meeting 2019*, Malta
- M. Abbenhaus, B. Hoge, S. Fuchs: «Synergistic halogen-free flame retardant combinations for use in polystyrene foams», *33rd Polymer Degradation Discussion Group (PDDG) Meeting 2019*, Malta
- T. von Zons, S. Frücht, D. M. Weis, S. Fuchs: «Synthetic pathways towards novel organo-phosphorous flame retardants: Cyclotriphosphazenes with flame-retardant activity for use as flame-retardant additives for polystyrene and styrene copolymers», *European Meeting on Fire Retardant Materials (FRPM) 2019*, Turku, Finland
- M. Luksin, S. Frücht, U. Jonas, S. Fuchs: «Novel approaches for halogen-free flame retardant polystyrene foams: The interplay of organic phosphates and phosphonates with disulfides», *European Meeting on Fire Retardant Materials (FRPM) 2019*, Turku, Finland
- F. Bärmann, D. Dittmann, U. Braun, U. Jonas, S. Fuchs: «Degradation analysis of polypropylene in the presence of phosphorus and sulfur containing additives», *European Meeting on Fire Retardant Materials (FRPM) 2019*, Turku, Finland

- N. Hemker, D. Walper, U. Braun, S. Fuchs: «An experimental setup for the generation of microplastics: Degradation of polypropylene in the presence of different antioxidants», *32nd Polymer Degradation Discussion Group (PDDG) Meeting 2017*, Taormina, Italy
- M. Luksin, T. Gethmann, S. Fuchs: «Thermal degradation behaviour of novel sulfurous co-polymers», *32nd Polymer Degradation Discussion Group (PDDG) Meeting 2017*, Taormina, Italy
- S. Fuchs, F. Weber, J. Scoul: «Sulfurous Polymers: Changing the thermal degradation behavior of polystyrene in the condensed phase», *31st Polymer Degradation Discussion Group (PDDG) Meeting 2015*, Stockholm, Sweden
- S. Fuchs, T. Kapp, H. Otto, T. Schöneberg, R. Gust, A. D. Schlüter, “Synthesis of a New Set of Poly(amidoamine) Dendrimers with Potential Application as Anticancer Therapeutics”, *3rd International Dendrimer Symposium 2003*, Berlin, Germany
- S. Fuchs, T. Kapp, H. Otto, P. Franke, R. Gust, A. D. Schlüter, “Synthesis of a New Set of Poly(amidoamine) Dendrimers with Potential Application as Carrier Molecules for Anticancer Therapeutics”, *225th ACS National Meeting 2003*, New Orleans, USA
- S. Fuchs, T. Kapp, R. Gust, A. D. Schlüter, “Polyamidoamine Dendrimers with Natural Amino Acids as Carrier-Molecules for Anticancer Therapeutics”, *SFC Eurochem 2002*, Toulouse, France
- S. Fuchs, S. Müller, A. D. Schlüter, “Synthesis of Dendrimer-Drug Conjugates for Antitumor Therapy”, *5th International Symposium on Polymer Therapeutics 2002*, Cardiff, Great Britain
- S. Fuchs, R. Gust, A. D. Schlüter, “Synthesis of Dendrimer-Drug Conjugates for Antitumor Therapy”, *4th Minerva Student School on Molecular, Interfacial and Biological Aspects of Mesostuctures 2001*, Rehovot and Beer-Sheva, Israel

Patents / Patent applications

29. S. Fuchs, U. Keppeler, T. Albert: «Halogen-free flame retardant mixtures for polyolefin foams», WO2015/177347 A1 (26.11.2015).
28. M. Roth, S. Fuchs, P. Nesvadba, U. Keppeler: «Flammschutzmittel auf Basis von substituierten Di-, Tri- und Tetra-Arylethanverbindungen», EP2927302 A1 (07.10.2015).
27. S. Fuchs, T. Weiss, «Melamine phenylphosphinate flame retardant compositions», US8877838 B2 (04.11.2014).
26. C. Däschlein, S. Fuchs, K. Hahn, H. Fischer: «Method for producing expandable styrene polymer granulates and styrene polymer foam materials with reduced residual monomer content», EP2733166 A1 (21.05.2014).
25. C. Däschlein, S. Fuchs, K. Hahn, H. Fischer: «Process for the preparation of halogen free flame retardant polystyrene foams», EP2733165 A1 (21.05.2014).
24. S. Fuchs, C. Fleckenstein, *et. al.*: «Halogen-free, phosphorous-containing flameprotected polymer foams», US8691896 B2 (08.04.2014).
23. C. Fleckenstein, S. Fuchs, *et. al.*: «Synthesis of polyphenol disulfides for fireproofing agents for polymers», WO2013/135701 A1 (19.09.2013).
22. C. Fleckenstein, S. Fuchs, *et. al.*: «Production of polyphenol disulfides and their use as fireproofing agents in polymer compositions», EP2628762 A2 (21.08.2013).
21. K. Hahn, F. Braun, S. Fuchs, *et. al.*: «Method for producing expandable styrene polymers containing graphite and flame retardants», WO2013/092322 A2 (27.06.2013).
20. S. Fuchs, C. Fleckenstein, *et. al.*: «Flame-retardant polymer foams with halogen-free flame-retardant agents containing phosphorous on sugar basis», EP2574614 A1 (03.04.2013).
19. K. Hahn, S. Fuchs, B. Bruchmann, *et. al.*: «Polymer flame retardant», WO2013/017417 A1 (07.02.2013) & «Polymeric flame retardant», US2013/030066 A1 (31.01.2013).
18. S. Fuchs, T. Weiss, R. Xalter: «Melamine phenylphosphonate flame retardant compositions», US8349224 B2 (08.01.2013).
17. S. Fuchs, C. Fleckenstein, *et. al.*: «Flame-retardant system», WO2012/089667 A1 & US 2012/0172467 A1 (05.07.2012).
16. T. Ulanova, S. Fuchs, *et. al.*: «High temperature- and moisture-stable materials with improved insulating properties based on foams and disperse silicates», WO2012/019988 A1 & US2012/032103 A1 (16.02. 2012 & 09.02.2012).
15. S. Xue, S. Fuchs: «Flame-proofed molding compounds», WO2012/013564 A1 & «Flame retardant molding compositions», US2012/029122 A1 (02.02.2012).
14. S. Fuchs: «Flame retardant combinations of hydroxyalkyl phosphine oxides with 1,3,5-triazines and epoxides», US8084524 B2 (27.12.2011).
13. S. Fuchs, C. Fleckenstein, *et. al.*: «Flame retardant», WO2011/121001 A1 & US2011/245360 A1 (06.10.2011).
12. M. Peretolchin, S. Fuchs, *et. al.*: «Flame retardant composite foam», WO2011/113795 A2-A3 & US2011/230578 A1 (22.09.2011).
11. S. Fuchs, C. Fleckenstein, *et. al.*: «Flame retardant», WO2011/095552 A1 & US2011/196052 A1 (11.08.2011).

10. S. Fuchs, C. Fleckenstein, *et. al.*: «Halogen-free, phosphorous-containing flameprotected polymer foams», WO2011/095540 A2-A3 & US2011/196053 A1 (11.08.**2011**).
9. S. Fuchs, C. Fleckenstein, *et. al.*: «Flame Retardant (Phosphorylated Isosorbides and Glycolfuranes as renewables-based flame retardants for plastics)», WO2011/083009 A1 (14.07.**2011**).
8. K. Hahn, S. Fuchs, *et. al.*: «Flame protected polymer foams», WO2011/073141 A1 (23.06.**2011**).
7. B. Nehls, T. Ulanova, S. Fuchs, K. Hahn, B. Schmied: «Coating composition for foam particles», WO2011/064230 A1 (03.06.**2011**).
6. S. Fuchs, C. Fleckenstein, *et. al.*: «Halogen-free, flame-proof polymer foams containing at least one oligophosphorus compound», WO2011/029901 A1 (17.03.**2011**).
5. S. Fuchs, T. Weiss: «Melamine phenylphosphinate flame retardant compositions», WO2010057851 A1 (28.09.**2010**).
4. B. Nehls, S. Fuchs, *et. al.*: «Microwave-assisted setting of shaped ceramic/foam bodies», WO2010076170 A2 (08.07.**2010**).
3. S. Fuchs, M. Roth, R. Xalter: «Dihydrophosphophenanthrene (DOPO)-flame retardant in epoxy resins», WO2010/076276 A1 (08.07.**2010**).
2. S. Fuchs, T. Weiss, R. Xalter: «Melamine phenylphosphonate flame retardant compositions», WO2010/063623 A1 (10.06.**2010**).
1. S. Fuchs: «Flame retardant combinations of hydroxyalkyl phosphine oxides with 1,3,5-triazines and epoxides», WO2009/034023 A2 (25.03.**2010**), US2010210763 A1 (19.08.**2010**), US8084524 B2 (27.12.**2011**).