FB 09 Chemistry, Pharmaceutical Sciences, Geography and Geosciences

Name	**Prof. Dr. Holger Frey**
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Professional Career

2022	ERC Advanced Grant for the project *RandoPEGmed*
2018 -	Associate Editor for the journal Polymer Chemistry (RSC)
2015 – 2017	Vice-Dean Department of Chemistry, Pharmaceutical Sciences and Geosciences, JGU
2013 – 2015	Dean Department of Chemistry, Pharmaceutical Sciences and Geosciences, JGU
2008 - 2013	Vice-Dean at the Department of Chemistry, Pharmaceutical Sciences and Geosciences, Johannes Gutenberg University Mainz (JGU)
Since 2003	C4-Universitätsprofessor, Institute of Organic Chemistry at the Johannes Gutenberg University Mainz, Chair of Organic and Macromolecular Chemistry
2002	Associate Professor (C3) Institute of Organic Chemistry at JGU
2001	Substitute professorship Johannes Gutenberg University Mainz for Prof. Helmut Ritter
1999 - 2001	Senior Lecturer, Institute of Macromolecular Chemistry at the University Freiburg
1994 - 1998	Habilitation and project leader FMF (Freiburger Materialforschungszentrum) and Institute of Macromolecular Chemistry, Albert Ludwigs-University Freiburg / Brsg.
1990 - 1993	PhD student at the Universiteit Twente (NL) (mentor: Prof. Martin Möller)
1990	Research stay at Carnegie-Mellon University, USA (Diploma thesis, Prof. K. Matyjaszewski)

Research Areas

Synthetic Polymer Chemistry; design and synthesis of novel functional polymer materials; branched and dendritic polymers; gradient, block copolymers and nanostructures; novel surfactants and biomedical application. Central research areas: polyether chemistry, polycarbonates, polysiloxanes. Central objectives are the design of novel macromolecular architectures, their structure-property relationships and potential application in areas like nanotechnology, surface modification, medicine, sensor technology. Novel Li-ion conductors and hybrid structures with high ion mobility; carbanionic block- and multiblock polymer synthesis for new materials. The group also focuses on biomedical materials and concepts to replace poly(ethylene glycol) (PEG) by non-immunogenic polymers.

Selected Publications

J. Herzberger, K. Niederer, H. Pohlit, J. Seiwert, M. Worm, F. R. Wurm, **H. Frey** (2016) Polymerization of Ethylene Oxide, Propylene Oxide and Other Alkylene Oxides: Synthesis, Novel Polymer Architectures and Bioconjugation. ***Chem. Rev.*** *116 (4)*, 2170-2243.

T. Johann, J. Keth, M. Bros, **H. Frey** (2019) A general concept for the introduction of hydroxamic acids into polymers", ***Chemical Science***, *10*, 7009-7022.

C. Wahlen, **H. Frey** (2021) Anionic Polymerization of Terpene Monomers: New Options for Bio-Based Thermoplastic Elastomers. ***Macromolecules***, *54*, 7323–7336.

M. Steube, T. Johann, R. D. Barent, A. H. E. Müller, **H. Frey** (2022) Rational Design of Tapered Multiblock Copolymers for Thermoplastic Elastomers", ***Prog. Polym. Sci.*** *124*, 101488.