Prof. Dr. Rainer Haag
born April 14, 1968 in Darmstadt, Germany
Chair Professor of Organic and Macromolecular Chemistry,
Institute of Chemistry and Biochemistry – Macromolecular Chemistry
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married, 3 Children in the age of 18, 16, 12 years

PROFESSIONAL PREPARATION

1997 - 1999 Research associate in the Department of Chemistry, Harvard University, Cambridge, Massachusetts (USA) with Prof. George M. Whitesides

1996 - 1997 Postdoctoral fellow at the Chemical Laboratory, University of Cambridge (England) with Prof. Steven V. Ley

1992 - 1995 Ph.D. thesis at the Institute for Organic Chemistry, Georg-August-Universität Göttingen (Germany) with Prof. Dr. A. de Meijere

APPOINTMENTS

06-08.2014 Visiting professor, McGill University, Montreal (Canada) with Prof. Gerd Multhaup and University of British Columbia, Vancouver (Canada) with Prof. Don Brooks

06-08.2009 Visiting professor, Harvard University, Cambridge (USA), with Prof. David Weitz

2003 – 2004 Associate Professor of Organic Polymer Chemistry, Universität Dortmund

1999 – 2002 Group Leader and Habilitation at Freiburg Materials Research Center and Institute for Macromolecular Chemistry, Universität Freiburg

1997 – 1999 Research associate in the Department of Chemistry, Harvard University, Cambridge, Massachusetts (USA) with Prof. George M. Whitesides

1996 – 1997 Postdoctoral fellow at the Chemical Laboratory, University of Cambridge (England) with Prof. Steven V. Ley

HONORS AND AWARDS

2016 Innovation Award Berlin-Brandenburg with the startup DendroPharm

2015 Research Building “SupraFAB” (granted by the German Research Council)

2014 Teaching Award for the Concept “Translation of Project Ideas”, Freie Universität Berlin

2010 Doolittle Award of the American Chemical Society (ACS)

2004 Nanoscience Award for Young Scientists from the Ministry of Science (BMBF)

2003 Dozentenstipendium of the German Chemical Industry (VCI)

2002 Heinz Maier-Leibnitz-Prize 2002 of the Deutsche Forschungsgemeinschaft (DFG)

2001 Reimund-Stadler-Prize of GdCh-Subgroup Macromolecular Chemistry

2000 ADUC-Habilitanden-Award of the Gesellschaft Deutscher Chemiker (GdCh)

1997 Selected Member of the Studienstiftung des Deutschen Volkes

SCIENTIFIC BOARDS AND OTHER FUNCTIONS (SELECTION)

2017 Scientific Advisory Board, Angewandte Chemie, ACS Central Science, Biomacromolecules, Henkel Detergent Unit

2011 Scientific Advisory Board, Henkel AG, Surfactants and Cleaning Products

Since 2007 Member of the Excellence Committee of the Freie Universität Berlin

2012-2017 FU-Speaker of the Helmholtz virtual Institute on Multifunctional Biomaterials

Since 2008 Speaker of the Collaborative Research Center SFB 765 on Multivalency

MAJOR COOPERATIONS

- Stephan Block, Dynamic Binding Analysis of Polymer-Virus Interactions, Institute of Chemistry, FU Berlin
- Christoph Böttcher, Cryo-TEM Studies on Polymer-Virus Complexes, Institute of Chemistry, FU Berlin,
- Donald Brooks, Bioactive Polyglycerol Architectures, Center for Blood Research, UBC Vancouver
- Jens Dernedde, Cellular Studies with Multivalent Inhibitors, Charité University Hospital, Berlin
- Marcus Mall, Airway Infection Animal Models, Multivalent Inhibitors. Charité, University Hospital, Berlin
- Andreas Herrmann, Viruses and Multivalent Influenza Inhibitors, Department of Biology, HU Berlin
- Wolfgang Kübler, 3D Cellular Artificial Lung Models, Charité University Hospital, Berlin
- Bert Meijer, Supramolecular Polymers and Hydrogen-bonding, Department of Chemistry, TU Eindhoven
- Roland Netz, Macromolecular Dynamics and Diffusion Modelling, Institute of Physics, FU Berlin
- Klaus Osterrieder, Multivalent Virus Inhibitors and BSL3-Laboratory, Veterinary Medicine, FU Berlin
- Jürgen Rabe, Binding and Visualization of Virus-Polymer Complexes, Department of Physics, HU Berlin
- Stephanie Reich, Nanophotonics with functionalized SWNT, Institute of Physics, FU Berlin
- Peter Seeberger, Complex Glycoarchitectures, Max Planck Institute for Colloids and Interfaces, Golm
- David Weitz, Microfluidics of Complex Systems, School of Science and Engineering, Harvard University

RESEARCH INTERESTS

Multifunctional dendritic polymers as carriers for catalysis, supramolecular nanocarriers for DNA/RNA and drug delivery, protein resistant surfaces, polymer therapeutics, multivalent architectures for biomedical applications, multivalent interactions of pathogens with biological surfaces

ACADEMIC ACHIEVEMENT

450 publications in peer review journals, h-index: 60
30 patents and applications (leading professor in the last 5 years)
Scientific mentor >100 PhDs/postdocs, of four junior groups and two start-up companies

SELECTED PUBLICATIONS (UP TO 10)

1. C. Cheng, J. Zhang, S. Li, Y. Xia, C. Nie, Z. Shi, J. L. Cuellar-Camacho, N. Ma, **R. Haag**, Adv. Mater., **2018**, *30*, 1705452. A Water-Processable and Bioactive Multivalent Graphene Nano-Ink for Highly Flexible Bio-Electronic Films and Nanofibers.
2. Bhatia, S.; Lauster, D.; Bardua, M.; Ludwig, K.; Angioletti-Uberti, S.; Popp, N.; Hoffmann, U.; Paulus, F.; Budt, M.; Stadtmuller, M.; Wolff, T.; Hamann, A.; Böttcher, C.; Herrmann, A.; **Haag, R.**, Linear polysialoside outperforms dendritic analogs for inhibition of influenza virus infection in vitro and in vivo. *Biomaterials* **2017,** *138*, 22-34.
3. Setaro, A.; Adeli, M.*; Glaeske, M.; Przyrembel, D.; Bisswanger, T.; Gordeev, G.; Maschietto, F.; Faghani, A.; Paulus, B.; Weinelt, M.; Arenal, R.; **Haag, R.***; Reich, S.*, Preserving pi-conjugation in covalently functionalized carbon nanotubes for optoelectronic applications. *Nat Commun* **2017**, *8*, 14281.

4. Qi, Z.; Bharate, P.; Lai, C. H.; Ziem, B.; Böttcher, C.; Schulz, A.; Beckert, F.; Hatting, B.; Mulhaupt, R.; Seeberger, P. H.; **Haag, R.**, Multivalency at Interfaces: Supramolecular Carbohydrate-Functionalized Graphene Derivatives for Bacterial Capture, Release, and Disinfection. Nano Lett **2015**, *15*, 6051-6057.
5. Vonnemann, J.; Liese, S.; Kuehne, C.; Ludwig, K.; Dernedde, J.; Böttcher, C.; Netz, R. R.; **Haag, R.**, Size dependence of steric shielding and multivalency effects for globular binding inhibitors. *J Am Chem Soc* **2015**, *137*, 2572-2579.
6. Wei, Q.; Becherer, T.; Noeske, P.-L. M.; Grunwald, I.; **Haag, R.**, Adv. Mater. **2014**, *26*, 2688–2693, A universal approach to crosslinked hierarchical polymer multilayers as stable and highly efficient antifouling coatings.
7. Steinhilber, D.; Rossow, T.; Wedepohl, S.; Paulus, F.; Seiffert, S.; **Haag, R.**, A microgel construction kit for bioorthogonal encapsulation and pH-controlled release of living cells. *Angew Chem Int Ed Engl* **2013**, *52*, 13538-13543.
8. Steinhilber, D.; Sisson, A. L.; Mangoldt, D.; Welker, P.; Licha, K.; **Haag, R.**, Synthesis, reductive cleavage, and cellular interaction studies of biodegradable, polyglycerol nanogels. *Advanced Functional Materials* **2010,** *20*, 4133-4138.
9. L. Sisson, D. Steinhilber, T. Rossow, P. Welker, K. Licha, R. Haag, Angew. Chemie Int. Ed. **2009**, *48*, 7540-7545, Biocompatible functionalized polyglycerol microgels with cell penetrating properties;
10. Radowski, M. R.; Shukla, A.; von Berlepsch, H.; Böttcher, C.; Pickaert, G.; Rehage, H.; **Haag, R.**, Supramolecular aggregates of dendritic multishell architectures as universal nanocarriers. *Angew Chem Int Ed Engl* **2007,** *46*, 1265-1269.