

Dr. Thomas Baumgartner

Department of Chemistry
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Curriculum Vitae (Short)**Current Position:**

Full Professor and Canada Research Chair – Department of Chemistry, York University

Professional Experience:

- 07/2017 – present Full Professor, Department of Chemistry, York University
- 07/2017 – 06/2020 Adjunct Professor, Department of Chemistry, University of Calgary
- 07/2013 – 06/2017 Associate Head (Research), Department of Chemistry, University of Calgary
- 05/2013 – 06/2017 Acting Director, Centre for Advanced Solar Materials, University of Calgary
- 04/2013 – 06/2017 Full Professor, Department of Chemistry, University of Calgary
- 2013, 2014, 2015 AvH Visiting Professor, Department of Chemistry and Graduate School Molecular Science, University Erlangen-Nuremberg, Germany
- 04/2009 – 03/2013 Associate Professor, Department of Chemistry, University of Calgary
- 07/2006 – 03/2009 Assistant Professor, Department of Chemistry, University of Calgary
- 05/2002 – 05/2006 Habilitand (cf. Assistant Professor) at the Institute of Inorganic and Analytical Chemistry, Johannes Gutenberg-University, Mainz (2002-2003), and the Institute of Inorganic Chemistry, RWTH Aachen University (2003-2006); Mentor: Jun Okuda
- 09/1999 – 02/2002 Postdoctoral Fellow at the University of Toronto, in the research group of Ian Manners with research focus on transition metal-'clusterized' macromolecules
- 12/1998 – 08/1999 Research Associate at the Institute for Inorganic Chemistry at the University of Bonn

Education:

Dr. rer. nat. (Ph.D.) University of Bonn, Germany
02/1996 - 11/1998, dissertation in the research group of Edgar Niecke, Title: "C-functionalized bis(methylene)phosphoranes: Interesting building blocks for the stabilization of reactive intermediates"

Dipl. Chem. (M.Sc.) University of Bonn, Germany
06/1995 - 01/1996, work in the research group of Edgar Niecke, Title: "Studies on the reactivity of a (methylene)phosphoranylidene carbenoid"

Fellowships and Awards:

- 2017 - 2024 Canada Research Chair (Tier 1) in Sustainable Organomaterials
- 2013 Faculty of Science Award of Excellence in Research
- 2012 Friedrich Wilhelm Bessel Research Award, Alexander von Humboldt Foundation
- 2011 Japan Society for the Promotion of Science (JSPS) Invitation Fellowship (short term)
- 09/2007 - 08/2011 Alberta Ingenuity New Faculty Award
- 04/2002 - 11/2004 Liebig-Fellowship of the 'Fonds der Chemischen Industrie'
(German Chemical Industry Association)
- 09/1999 - 08/2001 DFG-Postdoctoral Research Fellowship

Research Interests:

- Materials Chemistry: Novel π -conjugated organophosphorus molecules, polymers and self-assembling materials for optoelectronic and energy-related applications
- Phosphaorganic Chemistry: Novel low-coordinate phosphorus ligands and their application in catalysis
- Organometallic Chemistry: Supramolecular/Macromolecular chemistry of transition metal complexes with very high metal concentration for applications in molecular electronics

Recent Publications

- "Xylene-Bridged Phosphaviologen Oligomers and Polymers as High-Performance Electrode Modifiers for Li-Ion Batteries", M. Stolar, C. Reus, T. Baumgartner, *Adv. Energy Mater.* **2016**, *6*, 1600944 (9 pages)
- "Dithienophosphole-based Phosphinamides with Intriguing Self-Assembly Behavior" Z. Wang, B. S. Gelfand, T. Baumgartner, *Angew. Chem. Int. Ed.* **2016**, *55*, 3481-3485.
- "A Convenient N-Arylation Route for Electron-Deficient Pyridines: The Case of π -Extended Electrochromic Phosphaviologens", C. Reus, M. Stolar, J. Vanderkley, J. Nebauer, T. Baumgartner, *J. Am. Chem. Soc.* **2015**, *137*, 11710-11717.
- "Synthesis and Tunability of Highly Electron-Accepting, N-Benzylated 'Phosphaviologens'", M. Stolar, J. Borau-Garcia, M. Toonen, T. Baumgartner, *J. Am. Chem. Soc.* **2015**, *137*, 3366-3371.
- "Molecular Engineering of "Click"-Phospholes Towards Self-Assembled Luminescent Soft Materials", X.-M. He, J.-B. Lin, W. H. Kan, P. Dong, S. Trudel, T. Baumgartner, *Adv. Funct. Mater.* **2014**, *24*, 897-906.
- "Dithieno[3,2-c:2',3'-e]-2,7-diketophosphepin: A Unique Building Block for Multifunctional π -Conjugated Materials", X. M. He, J. Borau-Garcia, A. Y. Y. Woo, S. Trudel, T. Baumgartner, *J. Am. Chem. Soc.* **2013**, *135*, 1137-1147.
- "Bio-inspired Phosphole-Lipids: From Highly Luminescent Organogels to Mechanically Responsive FRET", Y. Ren, W. H. Kan, V. Thangadurai, T. Baumgartner, *Angew. Chem.* **2012**, *124*, 4031-4035; *Angew. Chem. Int. Ed.* **2012**, *51*, 3964-3968.
- "External-Stimuli Responsive Photophysics and Liquid Crystal Properties of Self-Assembled 'Phosphole-lipids'", Y. Ren, W. H. Kan, M. A. Henderson, P. G. Bomben, C. P. Berlinguette, V. Thangadurai, T. Baumgartner, *J. Am. Chem. Soc.* **2011**, *133*, 17014-17026.
- "Room Temperature Multifunctional Organophosphorus Gels and Liquid Crystals", C. Romero-Nieto, M. Marcos, S. Merino, J. Barberá, T. Baumgartner, J. Rodríguez-López, *Adv. Funct. Mater.* **2011**, *21*, 4088-4099.
- "3,7-Diazadibenzophosphole Oxide – A Phosphorus-Bridged Viologen-Analogue with Dramatically Lowered Reduction Threshold", S. Durben, T. Baumgartner, *Angew. Chem.* **2011**, *123*, 8096-8100; *Angew. Chem. Int. Ed.* **2011**, *50*, 7948-7952.
- "Dually Switchable Heterotetracenes – Addressing the Photophysical Properties and Self-Organization of the P-S-System", Y. Ren, T. Baumgartner, *J. Am. Chem. Soc.* **2011**, *133*, 1328-1340.

Selected Reviews:

- "Phosphorus-Containing Materials for Organic Electronics", M. Stolar, T. Baumgartner, *Chem. Asian J.* **2014**, *9*, 1212-1225.
- "Insights on the Design and Electron-Acceptor Properties of Conjugated Organophosphorus Materials", T. Baumgartner, *Acc. Chem. Res.* **2014**, *47*, 1613-1622.
- "Organophosphorus π -Conjugated Materials", T. Baumgartner, R. Réau, *Chem. Rev.* **2006**, *106*, 4681-4727.