

## Curriculum Vitae - Klaus Schmidt-Rohr

Date and Place of Birth: April 22, 1967; Heidelberg, Germany.

**Education**

High school: 7<sup>th</sup> and 10<sup>th</sup> grades skipped.  
Studies: Physics at Heidelberg University, 1984-1987, and at Mainz University, 1987-1989.  
Diploma: Physics, Mainz University, Germany, 1989.  
Ph.D.: Mainz University, Germany, December 1991.  
Supervisor: Professor Hans W. Spiess, Max-Planck Institute for Polymer Research.

### Honors

American Physical Society Fellow, 2013.  
Iowa State University Award for Outstanding Career Achievement in Research, 2009.  
American Association for the Advancement of Science (AAAS) Fellow, 2008.  
Dillon Medal (Polymer Division, American Physical Society), 2001.  
Alfred P. Sloan Research Fellowship, 2000.  
Rudolf-Kaiser Prize (German Physical Society), 1996.  
Beckman Young Investigator Award, 1996.  
Postdoctoral Fellowship (BASF AG & German Natl. Scholarship Foundation) 1993/94.  
Otto-Hahn Medal of the Max-Planck Society, 1991. Dieter-Rampacher Prize, 1991.  
Dissertation "summa cum laude". Diploma "with excellence".  
Fellowship from the German National Scholarship Foundation, 1985-1989.

### Professional Experience

July 2014 – present	Professor, Department of Chemistry, Brandeis University, Waltham, MA
June 2005 – June 2014	Full Professor, Dept. of Chemistry, Iowa State University, Ames, IA
Feb. 2000 – May 2005	Associate Professor in the Department of Chemistry at ISU
Sept. 1997 - Jan. 2000	Associate Professor (with tenure), Dept. of Polymer Science & Engineering, University of Massachusetts at Amherst.
Jan. 1995 - Aug. 1997	Assistant Professor in the Department of Polymer Science and Engineering, University of Massachusetts at Amherst.
Jan. 1993 - Jan. 1995	Postdoctoral Research Fellow at the Dept. of Chemistry, UC Berkeley, in the laboratory of Professor Alexander Pines.
Aug. 1992 - Dec. 1992	Project Manager at the Max-Planck Institute (MPI) for Polymer Research, with Professor Hans W. Spiess.
Sept. 1991 - Dec. 1992	Staff Scientist at the MPI for Polymer Research in the laboratory of Professor Hans W. Spiess.
July 1990 - August 1991	Max-Planck Society Graduate Research Fellow, at the MPI for Polymer Research.
April 1989 - June 1990	Military service in a technical unit, elected Spokesman of the Ranks. Part-time research at the MPI for Polymer Research.

Published >190 peer-reviewed research papers, 9 book chapters, and one monograph.

# Selected Recent Publications

## Structure of Carbon Materials

1. J. M. Anderson, R. L. Johnson, K. Schmidt-Rohr, B. H. Shanks "Solid State NMR of Chemical Structure and Hydrothermal Deactivation of Moderate-Temperature Carbon Materials with Acidic SO<sub>3</sub>H Sites" *Carbon* **74**, 333–345 (2014).
2. H. N. Pham, A. E. Anderson, R. L. Johnson, K. Schmidt-Rohr, A. K. Datye "Improved Hydrothermal Stability of Mesoporous Oxides for Aqueous Phase Reactions" *Angew. Chemie Int. Ed.* **51**, 13163-13167 (2012).
3. C. E. Brewer, Y-Y. Hu, K. Schmidt-Rohr, S. D. Joseph, T. E. Loynachan, D. A. Laird, R. C. Brown "Extent of Pyrolysis Impacts on Fast Pyrolysis Biochar Properties" *J. Environm. Quality* **41**, 1115-1122 (2011).
4. X-W. Fang, K. Schmidt-Rohr. "Alkyl and Other Major Structures Formed in Model Maillard Reactions Studied by Solid-State NMR" *J. Agric. Food Chem.* **59**, 481-490 (2011).

## Structure of Natural Organic Mater

1. X. Cao, C. Lattao , J. -J. Pignatello , J. Mao and K. Schmidt-Rohr "Sorption Selectivity in Natural Organic Matter Probed with Carbonyl-<sup>13</sup>C-Labeled Benzophenone and <sup>1</sup>H-<sup>13</sup>C NMR Spectroscopy" *Environ. Sci. Technol.* **8**, 8645-8652 (2014).
2. J. Mao, R. L. Johnson, J. Lehmann, D. C. Olk, E. G. Neves, M. L. Thompson, K. Schmidt-Rohr "Abundant and Stable Char in Soil: Implications for Soil Fertility and Carbon Sequestration", *Environ. Sci. Technol.* **46**, 9571-9576 (2012).
3. J. Mao, X-W. Fang, Y. Lan , A. Schimmelmann , M. Mastalerz , L. Xu and K. Schmidt-Rohr "Chemical and Nanometer Structure of Kerogen and its Change During Thermal Maturation investigated by advanced solid-state <sup>13</sup>C NMR spectroscopy" *Geochim. Cosmochim. Acta* **74**, 2110-2127 (2010).

## NMR Technique Development

1. R. L. Johnson, K. Schmidt-Rohr "Quantitative Solid-State <sup>13</sup>C NMR Spectra with Signal

- Enhancement by Multiple Cross-Polarization", *J. Magn. Reson.* **239**, 44-49 (2014).
2. R. L. Johnson, J. M. Anderson, B. H. Shanks, X-W. Fang, M. Hong, K. Schmidt-Rohr "Spectrally Edited 2D  $^{13}\text{C}$ - $^{13}\text{C}$  NMR Spectra without Diagonal Ridge for Characterizing  $^{13}\text{C}$ -Enriched Low-Temperature Carbon Materials" *J. Magn. Reson.*, **234**, 112-124 (2013).
  3. K. Schmidt-Rohr, K. J. Fritzsche, S. Y. Liao, M. Hong. "Spectral Editing of Two-Dimensional Magic-Angle-Spinning Solid-State NMR Spectra for Protein Resonance Assignment and Structure Determination". *J. Biomol. NMR* **54**, 343 (2012).

### Basic Thermodynamics

1. Klaus Schmidt-Rohr "Why Combustions Are Always Exothermic, Yielding About 418 kJ per Mole of  $\text{O}_2$ ". *J. Chem. Educ.* (2015). DOI: 10.1021/acs.jchemed.5b00333
2. K. Schmidt-Rohr "Expansion Work without the External Pressure, and Thermodynamics in Terms of Quasistatic Irreversible Processes", *J. Chem. Educ.* **91**, 402-409 (2014).

### Nafion Fuel Cell Membrane

1. X. Kong, K. Schmidt-Rohr "Water-Polymer Interfacial Area in Nafion: Comparison with Structural Models" *Polymer* **52**, 1971-1974 (2011).
2. K. Schmidt-Rohr, Q. Chen "Parallel Cylindrical Water Nanochannels in Nafion Fuel Cell Membranes", *Nat. Mater.* **7**, 75-83 (2008).

### Thermoelectric Tellurides

1. S. N. Girard, K. Schmidt-Rohr, T. C. Hasapis, B. Njegic, E. M. Levin, A. Rawal, K. M. Paraskevopoulos, M. Kanatzidis, "Chemical Analysis of Phase Separation in  $\text{PbTe}$  –  $\text{PbS}$  Thermoelectric Materials" *Adv. Funct. Mater.* **23**, 747-757 (2013).
2. E. M. Levin, S. L. Bud'ko, K. Schmidt-Rohr "Enhancement of thermopower of TAGS-85 high-performance thermoelectric material via doping with Dy". *Adv. Funct. Mater.* **22**, 2766-2774 (2012).

3. M. D. Nielsen, E. M. Levin, C. M. Jaworski, K. Schmidt-Rohr, J. P. Heremans  
"Chromium as resonant donor impurity in PbTe", *Phys. Rev. B* **85**, 045210 (2012).