Rebekka S. Klausen, Ph.D.

Johns Hopkins University
Department of Chemistry
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Professional Experience

2013–present Assistant Professor
Department of Chemistry
Johns Hopkins University

2011–2013 Postdoctoral Research Scientist
Department of Chemistry
Columbia University
Advisor: Prof. Colin Nuckolls

Education

2005–2011 Harvard University, Cambridge, MA.
Ph.D. in Chemistry
Thesis: Benzoic Acid and Thiourea Co-Catalysis
Advisor: Prof. Eric N. Jacobsen

2001–2005 Boston College, Chestnut Hill, MA
B.S. in Biochemistry, *cum laude*
Advisor: Prof. Steven D. Bruner

Awards and Achievements

2018 NSF CAREER Award. *The National Science Foundation's most prestigious awards in support of junior faculty who exemplify the role of teacher-scholars through research, education and the integration of education and research.*

2017 Catalyst Award, Johns Hopkins University. *These grant awards of up to $75,000 support the promising research and creative endeavors of early career faculty with the goal of launching them on a path to a sustainable and rewarding academic career.*

2017 Chemical Communications Emerging Investigator. *An annual special issue showcasing internationally recognized, up-and-coming scientists who are making outstanding contributions to their respective fields.*

2017 Sloan Research Fellowship. *Awarded yearly to 126 researchers in recognition of distinguished performance and a unique potential to make substantial contributions to their field.*

2017 Marion Milligan Mason Award for Women in the Chemical Sciences. *Recognizes promising future senior investigators in the chemical sciences. Awarded to four female researchers every two years.*

2017 ACS Division of Organic Chemistry, Young Academic Investigator. *Recognizes ten pre-tenure faculty with the opportunity to present their research at the American Chemical Society Fall Meeting in Washington, DC.*

2017 ACS Division of Polymeric Materials: Science & Engineering (PMSE) Young Investigator. *Recognizes 24 scientists from academia, industry, and national laboratories within seven*

years of completing their degree who have made significant contributions to Polymer Science and Engineering.

2016 Braude Award, Maryland Section of the American Chemical Society. *Awarded annually to one professor conducting outstanding research involving undergraduate students at a college or university in the Chesapeake region.*

2015 Early Career Research Award, Department of Energy. *Supports the development of individual research programs of outstanding scientists early in their careers with a $750,000 five-year grant.*

2015 Doctoral New Investigator Award, Petroleum Research Fund. *Promotes the careers of young faculty by supporting research of high scientific caliber.*

2010 Fieser Prize Lecture Series, Harvard University

2008 Novartis Research Fellowship, Harvard University

2005 Matthew Copithorne Scholarship, Boston College

2005 Outstanding Graduating Biochemistry Major, Boston College

Publications (* = corresponding author, † = undergraduate co-author)

Independent Career

21. Marro, E. A.; Press, E. M. Siegler, M. A.; Klausen, R. S.* "Directional Building Blocks Determine Linear and Cyclic Silicon Architectures." *J. Am. Chem. Soc.* **2018**, ASAP. DOI: 10.1021/jacs.8b02541.

20. Folster, C.; Klausen, R. S.* "Metallocene Influence on Poly(Cyclosilane) Structure and Properties." *Polym. Chem*. **2018**, *9*, 1938–1941.

19. van de Wouw, H. L.; Lee, J. Y.†; Awuyah, E.†; Klausen, R. S.* "A BN Aromatic Ring Strategy for Tunable Hydroxy Content in Polystyrene." *Angew. Chem. Int. Ed*. **2018**, *57*, 1673–1677.

18. Marro, E. A.; Press, E. M.; Purkait, T.; Jimenez, D.†; Siegler, M. A.; Klausen, R. S.* "Cooperative Noncovalent Interactions Induce Ion Pair Separation in Diphenylsilanides." *Chem. Eur. J.* **2017**, *23*, 15633-15637.

17. van de Wouw, H. L.; Lee, J. Y.†; Klausen, R. S.* "Gram-Scale Free Radical Polymerization of an Azaborine Vinyl Monomer." *Chem Commun.* **2017,** *53*, 7262-7265.

16. Zhou, J.; Folster, C. P.; Surampudi, S. K.; Jimenez, D.†; Klausen, R. S.;* Bragg, A. E.* "Asymmetric Charge Separation and Recombination in Symmetrically Functionalized σ-π Hybrid Oligosilanes." *Dalton Trans*. **2017**, *46,* 8716-8726.

15. Press, E. M.; Marro, E. A.; Surampudi, S. K.; Siegler, M. A.; Tang, J.; Klausen, R. S.* "Poly(cyclosilane): A Polymer Inspired by Crystalline Silicon." *Angew. Chem. Int. Ed*. **2017**, *56*, 568–572.

14. Zhou, J.; Surampudi, S. K.; Bragg, A. E.;* Klausen, R. S.* "Photoinduced Charge Separation in Molecular Silicon." *Chem. Eur. J.*, **2016**, *22*, 6204–6207.

13. van de Wouw, H. L.; Lee, J. Y.†; Siegler, M. A.; Klausen, R. S.* "The Innocent BN Bond." *Org. Biomol. Chem*. **2016**, *14*, 3256–3263.

12. van de Wouw, H. L.; Chamorro, J.†; Quintero, M.†; Klausen, R. S.* "Opposites Attract: Organic Charge Transfer Salts." *J. Chem. Educ.*, **2015**, *92*, 2134–2139.

11. Surampudi, S.; Yeh, M.-L.; Siegler, M. A.; Hardigree, J. F. M.; Kasl, T. A.†; Katz, H. E.; Klausen, R. S.* "Increased Carrier Mobility in End-Functionalized Oligosilanes." *Chem. Sci.*, **2015**, *6*, 1905–1909.

Supervised Career

10. Klausen, R. S.; Kennedy, C. R.; Hyde, A. M.; Jacobsen, E. N. "Chiral Thioureas Promote Enantioselective Pictet–Spengler Cyclization by Stabilizing Every Intermediate and Transition State in the Carboxylic Acid-Catalyzed Reaction." *J. Am. Chem. Soc*. **2017**, *139*, 12299–12309.

9. Su, T. A.; Li, H.; Klausen, R. S.; Kim, N.; Neupane, M.; Leighton, J.; Steigerwald, M. L.*; Venkataraman, L.*; and Nuckolls, C.* "Silane and Germane Electronics." *Acc. Chem. Res*. **2017**, 50, 1088–1095.

8. Su, T. A.; Li, H.; Klausen, R. S.; Widawsky, J. R.; Batra, A.; Steigerwald, M. L.; Venkataraman, L.; Nuckolls, C.* "Tuning Conductance in pi-sigma-pi Single-Molecule Wires." *J. Am. Chem. Soc.*, **2016**, *138*, 7791–7795.

7. Su, T. A.; Li, H.; Zhang, V.; Neupane, M.; Batra, A.; Klausen, R. S.; Kumar, B.; Steigerwald, M. L.; Venkataraman, L.; Nuckolls, C.* "Single-Molecule Conductance in Atomically Precise Germanium Wires." *J. Am. Chem. Soc.*, **2015**, *137*, 12400–12405.

6. Klausen, R. S.; Widawsky, J.; Su, T. A.; Li, H.; Steigerwald, M. L.; Venkataraman, L.*; Nuckolls, C.* "Evaluating Atomic Components in Fluorene Wires." *Chem. Sci.*, **2014**, *5*, 1561–1564.

5. Su, T. A.; Widawsky, J. R.; Li, H.; Klausen, R. S.; Leighton, J.*; Steigerwald, M. L.*; Venkataraman, L.*; Nuckolls, C.* "Silicon Ring Strain Creates High Conductance Pathways in Single-Molecule Circuits." *J. Am. Chem. Soc.* **2013**, *135*, 18331–18334.

4. Klausen, R. S.; Widawsky, J.; Steigerwald, M. L.; Venkataraman, L.; Nuckolls, C.* "Conductive Molecular Silicon." *J. Am. Chem. Soc*. **2012**, *134*, 4541–4544.

3. Ahn, S.; Aradhya, S. V.; Klausen, R. S.; Capozzi, B.; Roy, X.; Steigerwald, M. L.; Nuckolls, C.*; Venkataraman, L.* "Electronic Transport and Mechanical Stability of Carboxyl Linked Single Molecule Junctions." *Phys. Chem. Chem. Phys*. **2012**, *14*, 13841–13845.

2. Yunmi, L.; Klausen, R. S.; Jacobsen, E. N.* "Practical Enantioselective Synthesis of Tetrahydro-γ-carbolines Catalyzed by a Chiral Thiourea and Benzoic Acid." *Org. Lett.* **2011**, *13*, 5564–5567.

1. Klausen, R. S.; Jacobsen, E. N.* "Weak Brønsted Acid-Thiourea Co-catalysis: Enantioselective, Catalytic Protio-Pictet–Spengler Reactions." *Org. Lett*. **2009**, *11*, 887–890. Highlighted by List, B, Ratjen, L. Synfacts 2009, 4, 443.

Patent Applications

1. van de Wouw, H. L.; Lee, J. Y.; Klausen, R. S. "ORGANOBORANE POLYMERS FOR TUNABLE HYDROPHILICITY AND WETTABILITY." Provisional, filed October 16, 2017.

Competitive Grants – Current

Year	*Title*	*Source*	*Amount*
2015	Mesoscale Fragments of Crystalline Silicon by Chemical Synthesis, sole PI (07/15/15-07/14/2020)	Department of Energy (DOE)	$750,000
2015	Controlling Polarization in Polystyrene, sole PI (09/01/16-08/31/18)	Petroleum Research Fund (PRF)	$110,000
2016	New Materials for Efficient and Low-cost Solar Cell Technology (co-PIs Arthur E. Bragg, Susanna Thon)	JH Discovery Award	$100,000
2017	Mason Award: Molecular Patterning for Materials Synthesis, sole PI	American Academy of Arts and Sciences (AAAS)	$50,000
2017	Sloan Research Fellowship	Alfred P. Sloan Foundation	$60,000
2017	Catalyst Award	Johns Hopkins University	$75,000
2018	Hydrophobic and Hydrophilic Polymers from Boron-Containing Polyolefins, sole PI (02/01/2018-01/31/2023)	National Science Foundation (NSF)	$675,000

Competitive Grants – Pending

Year	*Title*	*Source*	*Amount*
2018	Phase 1 Center for Chemical Innovation: Center for Transformative Catalysis, co-PI	National Science Foundation (NSF)	$1,800,000
2017	Structural and Optical Control of Charge Transfer in Sigma-Pi Hybrid Organosilanes for Switchable Optoelectronics, co-PI (09/01/18-08/31/21)	National Science Foundation (NSF)	$499,702

Press

January 17, 2018. “A BN Aromatic Ring Strategy for Tunable Hydroxy Content in Polystyrene” is highlighted by *Chemistry & Engineering News* reporter Steve Ritter as part of the #BoronWednesday Twitter report.

September 18, 2017. “Chemists build a zoo of new polymer building blocks.” *Chemistry & Engineering News,* Steve Ritter.

September, 2017. “Poly(cyclosilane): A Polymer Inspired by Crystalline Silicon.” is highlighted in 化学 (*Kagaku*, translation *Chemistry*). Author, Prof. Ishiwari Fumitaka.

August 3, 2017. “Making an Ultra-small Silicon Chip.” Newswise, Department of Energy, Basic Energy Sciences, Science Highlights.

Invited Presentations

2018 University of Michigan, Department of Chemistry, Ann Arbor, MI, November 6, 2018.

University of Oregon, Department of Chemistry, Eugene, OR, October 26, 2018.

The Pennsylvania State University, Department of Chemistry, State College, PA,

October 16, 2018.

University of Pennsylvania, Department of Chemistry, Philadelphia, PA, October 1, 2018.

University of North Carolina, Department of Chemistry, September 20, 2018.

Duke University, Department of Chemistry, September 19, 2018.

American Chemical Society Fall Meeting, Boston, MA, August 2018. Three invited talks.

10th US-Japan Workshop on Advances in Organic/Inorganic Hybrid Materials, Rutgers University, Newark, NJ, June 17-21, 2018.

4th Functional Polymeric Materials Conference, Nassau, Bahamas, June 5-June 8, 2018.

49th Silicon Symposium, University of Alberta, Edmonton, Canada, May 29-June 1, 2018.

Cornell University, Department of Chemistry, Ithaca, NY, May 17, 2018.

Dartmouth University, Department of Chemistry, Hanover, NH, April 12, 2018.

"Molecular Silicon Electronics." American Chemical Society Spring Meeting, New Orleans, LA, March 19, 2018.

2017 "Main Group Materials: Strategic Synthesis for the Discovery of New Properties and Applications. "Case Western University, Cleveland Ohio, November 2, 2017.

"Main Group Materials: Strategic Synthesis for the Discovery of New Properties and Applications." University of California Los Angeles, October 19, 2017.

"Main Group Materials: Strategic Synthesis for the Discovery of New Properties and Applications." California Institute of Technology, Pasadena, CA, October 18, 2017.

"Strategic Nanomaterial Synthesis." Division of Organic Chemistry, Young Academic Investigator Symposium, ACS National Meeting, Washington, DC, August 22, 2017.

"Polymers inspired by crystalline silicon." Division of Polymer Chemistry, Non-conventional Building Blocks in Conjugated Materials: Innovative Designs & New Applications, ACS National Meeting, Washington, DC, August 22, 2017

Invited by the Alliance for Diversity in Science and Engineering (ADSE). "Rational Synthesis of Semiconductor Fragments." University of Maryland, College Park, MD, May 25, 2017.

"Rational Synthesis of Semiconductor Fragments." PMSE Young Investigator Symposium, American Chemical Society Spring Meeting, San Francisco, CA, April 2, 2017.

"Rational Synthesis of Semiconductor Fragments." Georgetown University, Washington, DC, February 16, 2017.

2016 "Going Smaller: Making an Ultrasmall Silicon "Chip"." American Association for the Advancement of Science, Washington, DC, December 15, 2016.

"Molecular Silicon Electronics." Department of Chemistry, University of Delaware, Newark, DE, November 8, 2016.

"Braude Award Lecture." Maryland Section of the American Chemical Society, Johns Hopkins University, Baltimore, MD, October 26, 2016.

"Adventures in Academia." NIDA Intramural Research Program, Baltimore, MD, October 7, 2016.

"Rational Synthesis of Semiconductor Fragments." Franklin and Marshall College, Lancaster, PA, September 13, 2016.

"Rational Synthesis of Semiconductor Fragments." University of Richmond, Richmond, VA, September 9, 2016.

"Mesoscale Fragments of Crystalline Silicon by Chemical Synthesis." Department of Energy Basic Energy Sciences Materials Chemistry PI Meeting, Gaithersburg, MD, July 14, 2016.

"Target-Oriented Silicon Synthesis." Reaction Mechanisms Conference, St. Louis University, St. Louis, MO, June 26, 2016.

2015 "Molecular Silicon Electronics." 46th Silicon Symposium, University of California Davis, Davis, CA, June 19-24, 2015.

2014 "Carbon and Silicon Molecular Electronics." Department of Chemistry, Shippensburg University, Shippensburg, PA, October 17, 2014.

"Design and Synthesis of Organosilicon Molecular Electronics." Department of Chemistry, Susquehanna University, Susquehanna, PA, September 14, 2014.

"Carbon and Silicon Molecular Electronics." Department of Chemistry, Bloomsburg University of Pennsylvania, Bloomsburg, PA, March 28, 2014.

"Carbon and Silicon Molecular Electronics." Department of Chemistry, Towson University, Towson, MD, February 27, 2014.

2013 "Carbon and Silicon-Based Electronic Materials." Condensed Matter Physics, Krieger School of Arts and Sciences, Johns Hopkins University, Baltimore, MD, December 2, 2013.

"From Single Molecules to Materials." Materials Science and Engineering, Whiting School of Engineering, Johns Hopkins University. Baltimore, MD, October 30, 2013.

"Molecular Control of Electronic Materials". Baltimore Polytechnic Institute, Baltimore, MD, October 1, 2013.

Professional Organizations and Activities

Member Materials Research Society, American Chemical Society (Division of Organic Chemistry, Division of Polymer Chemistry, Division of Polymeric Materials: Science & Engineering)

Reviewer *Journal of the American Chemical Society, Angewandte Chemie, Journal of Chemical Education, Dalton Transactions, The Journal of Organic Chemistry, Macromolecules, Organometallics, Accounts of Chemical Research, Chemical Science, Molecules, Polymers, Synthetic Metals, ACS Macro Letters*, *Polymer Chemistry*, National Science Foundation, Department of Energy, Petroleum Research Fund.

Service and Synergistic Activities

Departmental Service: Graduate Admissions Committee, Graduate Recruiting Committee, Graduate Curriculum Committee, Inorganic-Materials Junior Faculty Search (2014–2015)

2018 Invited Speaker, Women Serious About Science (WSAS), Baltimore Polytechnic Institute (01/16/18)

2017–2018 Leadership Program for Women Faculty, Johns Hopkins University School of Medicine. Sponsored by the Office of Women in Science and Medicine and the Office of Faculty Development.

2017 Invited Speaker, Organization for Cultural Diversity (OCDS), University of California, Los Angeles, CA.

2017 Invited Speaker, Alliance for Diversity in Science and Engineering (ADSE), University of Maryland, College Park, MD.

2017 Co-Organizer (with Prof. Emily Pentzer, Case Western Reserve University), Power Hour, Polymers Gordon Research Conference, June, 2017.

2016 The George and Monique Braude Award, Maryland Section of the American Chemical Society. Awarded annually to one professor conducting outstanding research involving undergraduate students at a college or university in the Chesapeake region. Five of seven published papers from the Klausen group include undergraduate co-authors.

2015– Founder & Organizer, "Pathways to Your Career", Chemistry Career Development Seminar Series, JHU

2015 "Remarkable Reactions". This is an updated Chemistry Curriculum for 5th graders developed by STEM Achievement in Baltimore Elementary Schools (SABES), an NSF-funded collaboration between JHU and Baltimore City Public Schools.

2015 Co-Sponsor, Three Minute Thesis (3MT) Competition, JHU

2014– Reviewer, Provost's Undergraduate Research Award Selection Committee, JHU

2014– Faculty Advisor, JHU Student Affiliates of the American Chemical Society (SAACS)

2014– Mentor, Chemistry Women Mentorship Network (ChemWMN). Mentors a first-generation female college student.

2013 Invited Speaker, Women Serious About Science (WSAS), Baltimore Polytechnic Institute

Teaching

Spring 2018	AS.030.626 Advanced Mechanistic Organic Chemistry II
Fall 2017	AS.030.677 Advanced Organic Synthesis I
Spring 2017	AS.030.228 Intermediate Organic Chemistry Laboratory
Fall 2016	AS.030.677 Advanced Organic Synthesis I

Fall 2015	AS.030.677 Advanced Organic Synthesis I
Spring 2015	AS.030.228 Intermediate Organic Chemistry Laboratory
Fall 2014	AS.030.677 Advanced Organic Synthesis I
Fall 2013	AS.030.677 Advanced Organic Synthesis I

Current and Former Students and Postdoctoral Scientists

Current

Ms. Heidi van de Wouw (5th year graduate student)
Mr. Eric Moshe Press (5th year graduate student)
Mr. Carlton Folster (4th year graduate student)
Mr. Eric Marro (4th year graduate student)
Ms. Sea On Lee (2nd year graduate student)
Mr. Jack Ferguson (1st year graduate student)
Mr. Yuyang Ji (1st year graduate student)
Mr. Qifeng Jiang (1st year graduate student)
Dr. Tapas Purkait (Postdoctoral scientist)
Dr. Shehani Mendis (Postdoctoral scientist)
Ms. Jodie Barris (Sophomore)
Ms. Phi Nguyen (Junior)
Ms. Tiffany Zhou (Junior)
Mr. Elorm Awuyah (Junior)
Mr. Jae Young Lee (Senior)
Mr. Daniel Jimenez (Senior)

Former

Dr. Ming-Ling Yeh (Postdoctoral scientist)
Dr. Sravan K. Surampudi (Postdoctoral scientist)
Mr. Akhil Gupta (Undergraduate)
Mr. Tyler Kasl (Undergraduate)
Ms. Erin McDermott (Undergraduate)
Mr. Andrew Hwang (Undergraduate)