

Timothy A. Strobel – *Curriculum Vitae*

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PERSONAL Citizenship: USA

EDUCATION **Colorado School of Mines, Golden, CO USA**

Ph.D., Chemical Engineering, August 2008

B.S., Chemical Engineering, May 2004

PROFESSIONAL EXPERIENCE **Carnegie Institution of Washington, Washington, DC, USA**

Staff Scientist **September 2011 to Present**

Associate Director - EFree, DOE EFRC **August 2014 to Present**

Research Scientist **October 2010 to August 2012**

Carnegie Fellowship **September 2008 to September 2010**

Yanshan University, Qinhaungdao, China

Visiting Professor **June 2015 to Present**

Colorado School of Mines, Golden, CO, USA

Research Assistant **October 2003 to August 2008**

PROFESSIONAL ACTIVITIES ***Invited Lectures [35]***

2016 Plenary Speaker, iPolymorphs Conference, Donostia, Spain (upcoming)
2016 Invited Speaker, University of Nevada Las Vegas, Las Vegas, NV (upcoming)
2016 Invited Speaker, MRS Spring Meeting, Phoenix, AZ (upcoming)
2015 Invited Speaker, George Mason University, Fairfax, VA
2015 Invited Speaker, University of Southern Florida, Tampa, FL
2015 Invited Speaker, International Conference on Exotic Silicon, Golden, CO
2015 Invited Speaker, Yanshan University, Chem. Dept., Qinhaungdao, China
2015 Invited Speaker, Yanshan University, Materials Dept., Qinhaungdao, China
2015 Invited Speaker, HPSTAR, Shanghai, China
2015 Invited Speaker, University of Utah, Salt Lake City, UT
2015 Invited Speaker, ACHPR7, Bangkok, Thailand
2014 Invited Speaker, Gordon Research Conference, Holderness, NH
2014 Keynote Speaker, COMPRES Annual Meeting, Skamania Lodge, WA
2013 Invited Speaker, Naval Research Laboratory, Washington, DC
2013 Invited Speaker, Colorado School of Mines, Golden, CO
2012 Neighborhood Lecture, Carnegie Institution of Washington, Washington, DC

2012 Invited Speaker, International Union of Crystallography, Mito, Japan
2012 Invited Speaker, Gordon Research Conference, Easton, MA
2011 Invited Speaker, AIRAPT Conference, Mumbai, India
2011 Invited Speaker, American Chemical Society Meeting, Denver, CO
2011 Invited Speaker, Washington State University, Pullman, WA
2011 Invited Speaker, Tennessee Tech. University, Cookeville, TN
2011 Invited Speaker, Carnegie Institution of Washington, Washington, DC
2010 Invited Speaker, International Union of Crystallography, Gatlinburg, TN
2010 Invited Speaker, Gordon Research Conference, Holderness, NH
2010 Invited Speaker, Carnegie Institution of Washington, Washington, DC
2010 Invited Speaker, Cornell University, Ithaca, NY
2010 Invited Speaker, Clarkson University, Potsdam, NY
2010 Invited Speaker, University of New Hampshire, Durham, NH
2009 Invited Speaker, American Chemical Society Meeting, Washington, DC
2009 Invited Speaker, American Chemical Society Meeting, Salt Lake City, UT
2008 Invited Speaker, National Renewable Energy Laboratory, Golden, CO
2008 Invited Speaker, Telluride Science Research Center, Telluride, CO
2008 Invited Speaker, Carnegie Institution of Washington, Washington, DC
2007 Invited Speaker, Advanced Photon Source, Argonne Natl. Lab, Argonne, IL

Professional Societies

- American Chemical Society
- American Physical Society
- Materials Research Society

Awards and Honors

- Visiting Professor, Yanshan University (2015-present)
- Young Investigator Lecture, Gordon Conference on High Pressure (2014)
- CIW Science Holiday Card Contest (2012)
- Jamieson Award (2011)
- CIW Science Holiday Card Contest (2010)
- Young Investigator Lecture, Gordon Conference on High Pressure (2010)
- Carnegie Fellowship (2008)
- Second place, Colorado School of Mines Research Fair (2008)
- Honorable mention, Colorado School of Mines Research Fair (2007)

PEER-REVIEWED Citations (ISI) as of Jan. 2016 denoted by [x]. Total citations = 880, h-index = 16.
PUBLICATIONS

1. [0] Hu, M.; Zhao, Z.; Hu, W.; Strobel, T.A.; Sun, H.; He, J.; Yu, D.; Kono, Y.; Shu, J.; Mao, H.K.; Fei, Y.; Wang, Y.; Shen, G.; Juhl, S.J.; Wereszczak, A.A.; Liu, Z. Xu, B.; Tian, Y. "Compressed Glassy Carbon: An Interpenetrating Graphene Network with Extraordinary Specific Compressive Strength and Elastic Recovery" Submitted (2016).
2. [0] Zhao, Z.; Zhang, H.; Kim, D.Y.; Strobel, T.A. "Properties of Exotic Metastable Ge: The Case of ST12" Submitted (2016).
3. [0] Bhadram, V.S.; Kim, D.Y.; Strobel, T.A. "High-Pressure Synthesis and Characterization of Incompressible Titanium Pernitride" Submitted (2016).
4. [0] Lin, Y.; Strobel, T.A.; Cohen, R.E. "Structural Diversity in Lithium Carbides" *Physical Review B*, 92, 214106 (2015).

5. [0] Stefanoski, S.; Liu, H.; Yao, Y.; Strobel, T.A. "Ambient-Pressure Polymerization of Carbon Anions in the High-Pressure Phase Mg₂C." *Inorganic Chemistry*, 54, 10765 (2015).
6. [0] Zhou, J.; Lian, J.; Hou, L.; Zhang, J.; Gou, H.; Xia, M.; Zhao, Y.; Strobel, T.A.; Tao, L.; Gao, F. "Ultrahigh Volumetric Capacitance and Cyclic Stability of Fluorine and Nitrogen Co-Doped Carbon Microspheres." *Nature Communications*, 6, 8503 (2015).
7. [1] Zeng, T.; Hoffmann, R.; Nesper, R.; Ashcroft, N.W.; Strobel, T.A., Proserpio, D.M. "Li-Filled B-Substituted Carbon Clathrates." *Journal of The American Chemical Society*, 137, 12639 (2015).
8. [0] Muramatsu, T.; Wanene, W.K.; Somayazulu, M.S.; Vinitzky, E.; Chandra, D.; Strobel, T.A.; Struzhkin, V.V.; Hemley, R.J. "Metallization and Superconductivity in the Hydrogen-Rich Ionic Salt BaReH₉." *Journal of Physical Chemistry C*, 119, 18007 (2015).
9. [0] Gou, H.; Yonke, B.L.; Epshteyn, A.; Kim, D.Y.; Smith, J.S.; Strobel, T.A. "Pressure-Induced Polymerization of P(CN)₃." *Journal of Chemical Physics*, 142, 194503 (2015).
10. [3] Li, Y.L.; Wang, S.N.; Oganov, A.R.; Gou, H.; Smith, J.S.; Strobel, T.A. "Exotic Stable Calcium Carbides." *Nature Communications*, 6, 6974 (2015).
11. [12] Kim, D.Y.; Stefanoski, S.S.; Kurakevych, O.O.; Strobel, T.A. "Synthesis of an Open-Framework Allotrope of Silicon." *Nature Materials*, 14, 169 (2015). Selected for **Chemistry World Highlight**. Featured in **New Scientist**.
12. [8] Strobel, T.A.; Kurakevych, O.O.; Kim, D.Y.; Le Godec, Y.; Chrichton, W.A.; Guignard, J.; Guignot, N.; Cody, G.D.; Oganov, A.R. "Synthesis of β-Mg₂C₃: A Monoclinic High-Pressure Polymorph of Magnesium Sesquicarbide." *Inorganic Chemistry*, 53, 7020 (2014). Selected for **2014 ESRF Highlight**
13. [3] Rozsa, V.F.; Strobel, T.A. "Triple Guest Occupancy and Negative Compressibility in Hydrogen-Loaded β-Hydroquinone Clathrate" *Journal of Physical Chemistry Letters*, 5, 1880 (2014).
14. [7] Kurakevych, O.O.; Le Godec, Y.; Strobel, T.A.; Kim, D.Y.; Chrichton, W.A.; Guignard, J. "High-Pressure and High-Temperature Stability of Antifluorite Mg₂C by *In Situ* X-ray Diffraction and *Ab Initio* Calculations." *Journal of Physical Chemistry C*, 118, 8128 (2014).
15. [11] Kurakevych, O.O.; Strobel, T.A.; Kim, D.Y.; Cody, G.D. "Synthesis of Mg₂C: A Magnesium Methanide" *Angewandte Chemie International Edition*, 52, 8930 (2013). Selected for **inside back cover**.
16. [20] Kurakevych, O.O.; Strobel, T.A.; Kim, D.Y.; Muramatsu, T.; Struzhkin, V.V. "Na-Si Clathrates Are High-Pressure Phases: A Melt-Based Route to Control Stoichiometry and Properties" *Crystal Growth & Design*, 13, 303 (2013).
17. [6] Zaleski-Ejgierd, P.; Labet, V.; Strobel, T.A.; Hoffmann, R.; Ashcroft, N.M.W. "WH_n Under Pressure" *Journal of Physics: Condensed Matter*, 24, 155701 (2012). Selected for **IOPScience Web Highlight**.
18. [9] Ferrell, J.R.; Sachdeva, S.; Strobel, T.A.; Gopalakrishnan, G.; Koh, C.A.; Pez, G.; Cooper, A.C.; Herring, A.M. "Exploring the Fuel Limits of Direct Oxidation Proton Exchange Membrane Fuel Cells with Platinum Based Electrocatalysts." *Journal of the Electrochemical Society*, 159, B371 (2012).

19. [16] Strobel, T.A.; Ganesh, P.; Somayazulu, M.; Hemley, R.J. “Novel Cooperative Interactions and Structural Ordering in H₂S-H₂.” *Physical Review Letters*, 107, 255503 (2011).
20. [3] Chidester, B.A.; Strobel, T.A. “The Ammonia-Hydrogen System Under Pressure.” *Journal of Physical Chemistry C*, 115, 10433 (2011).
21. [10] Strobel, T.A.; Somayazulu, M.; Hemley, R.J. “Phase Behavior of H₂+H₂O at High Pressures and Low Temperatures.” *Journal of Physical Chemistry C*, 115, 4898 (2011).
22. [22] Strobel, T.A.; Goncharov, A.F.; Seagle, C.T.; Liu, Z.; Somayazulu, M.; Struzhkin, V.V.; Hemley, R.J. “High-Pressure Study of Silane to 150 GPa.” *Physical Review B*, 83, 144102 (2011).
23. [16] Strobel, T.A.; Chen, X.J.; Somayazulu, M.; Hemley, R.J. “Vibrational Dynamics, Intermolecular Interactions, and Compound Formation in GeH₄-H₂ Under Pressure.” *Journal of Chemical Physics*, 133, 164512 (2010).
24. [63] Strobel, T.A.; Hester, K.C.; Koh, C.A.; Sum, A.K.; Sloan, E.D. “Properties of the Clathrates of Hydrogen and Developments in Their Applicability for Hydrogen Storage.” *Chemical Physics Letters*, 478, 97-109 (2009) (**Invited**). **Featured on cover**.
25. [64] Strobel, T.A.; Somayazulu, M.; Hemley, R.J. “Novel Pressure-Induced Interactions in Silane-Hydrogen.” *Physical Review Letters*, 103, 065701 (2009). Selected as **Editor’s Suggestion**. Highlighted in **Physics Viewpoints** by N.W. Ashcroft, *Physics*, 2, 65 (2009).
26. [48] Strobel, T.A.; Koh, C.A.; Sloan, E.D. “Thermodynamic Predictions of Various Tetrahydrofuran and Hydrogen Clathrate Hydrates.” *Fluid Phase Equilibria*, 280, 61-67, (2009).
27. [34] Shin, K.; Kim, Y.; Strobel, T.A.; Prasad, P.S.R.; Sugahara, T.; Lee, H.; Sloan, E.D.; Sum, A.K.; Koh, C.A. “Tetra-n-butylammonium Borohydride Semiclathrate: A Hybrid Material for Hydrogen Storage.” *Journal of Physical Chemistry A*, 113, 6415-6418 (2009).
28. [36] Ohno, H.; Strobel, T.A.; Dec, S.F.; Sloan, E.D.; Koh, C.A. “Raman Studies of Methane-Ethane Hydrate Metastability.” *Journal of Physical Chemistry A*, 113, 1711-1716 (2009).
29. [31] Strobel, T.A.; Sloan, E.D.; Koh, C.A. “Raman Spectroscopic Studies of Hydrogen Clathrate Hydrates.” *Journal of Chemical Physics*, 130, 014506 (2009).
30. [38] Strobel, T.A.; Kim, Y.; Andrews, G.; Ferrell, J.R.; Koh, C.A.; Herring, A.M.; Sloan, E.D. “Chemical-Clathrate Hybrid Hydrogen Storage: Storage in Both Guest and Host.” *Journal of the American Chemical Society*, 130, 14975-14977 (2008).
31. [51] Strobel, T.A.; Koh, C.A.; Sloan, E.D. “Water Cavities of sH Clathrate Hydrate Stabilized by Molecular Hydrogen.” *Journal of Physical Chemistry B*, 112, 1885-1887 (2008).
32. [98] Strobel, T.A.; Koh, C.A.; Sloan, E.D. “Hydrogen Storage Properties of Clathrate Hydrate Materials.” *Fluid Phase Equilibria*, 261, 382-389 (2007).
33. [23] Strobel, T.A.; Hester, K.C.; Sloan, E.D.; Koh, C.A. “A Hydrogen Clathrate Hydrate with Cyclohexanone: Structure and Stability.” *Journal of the American Chemical Society*, 129, 9544-9545 (2007).

34. [78] Hester, K.C.; Strobel, T.A.; Sloan, E.D.; Koh, C.A. "Molecular Hydrogen Occupancy in Binary THF-H₂ Clathrate Hydrates by High Resolution Neutron Diffraction." *Journal of Physical Chemistry B*, 110, 14024-14027 (2006).
35. [21] Rovetto, L.J.; Strobel, T.A.; Koh, C.A.; Sloan, E.D. "Is Gas Hydrate Formation Thermodynamically Promoted by Hydrotrope Molecules?" *Fluid Phase Equilibria*, 247, 84-89 (2006).
36. [144] Strobel, T.A.; Taylor, C.J; Hester, K.C.; Dec, S.F.; Koh, C.A.; Miller, K.T.; Sloan, E.D. "Molecular Hydrogen Storage in Binary THF-H₂ Clathrate Hydrates." *Journal of Physical Chemistry B*, 110, 17121-17125 (2006).

PATENTS

1. Strobel, T.A.; Kurakevych, O.O; Kim, D.Y., "New Form of Silicon and Method of Making the Same" US Provisional App. No. 61/843,581.
2. Epshteyn, A.; Yonke, B.; Strobel, T.A.; Gou, H., "Preparation of Graphitic C₃N₃P Material" US Provisional App. No. 62/035,061.