

JONAS I. GOLDSMITH

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Department of Chemistry
Bryn Mawr College
101 N. Merion Avenue
Bryn Mawr, PA 19010
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EDUCATION

Cornell University, Ithaca, NY
Ph.D. in Inorganic/Physical Chemistry, August 2002
Advisor: Professor Héctor D. Abruña

Cornell University, Ithaca, NY
Master of Science in Inorganic/Physical Chemistry, June 1999

Swarthmore College, Swarthmore, PA
Bachelor of Arts in Chemistry, with Distinction, May 1996

PROFESSIONAL EXPERIENCE

Associate Professor of Physical Chemistry (tenured) 2013-present
Department of Chemistry, Bryn Mawr College, Bryn Mawr, PA

Assistant Professor of Physical Chemistry 2005 - 2013
Department of Chemistry, Bryn Mawr College, Bryn Mawr, PA

Post-doctoral Researcher 2004 – 2005
Advisor: Professor Stefan Bernhard, Princeton University, Princeton, NJ

Visiting Assistant Professor of Physical Chemistry 2003 - 2004
Department of Chemistry, Hobart and William Smith Colleges, Geneva NY
Chair: Professor Walter J. Bowyer

Post-doctoral Researcher 2002 – 2003
Advisors: Professor Alan T. Johnson (Department of Physics) and
Professor Alan G. MacDiarmid (Department of Chemistry)
University of Pennsylvania, Philadelphia, PA

PROFESSIONAL EXPERIENCE (cont.)

Graduate Research Assistant 1998 – 2002
Advisor: Professor Héctor D. Abruña, Cornell University, Ithaca, NY

Graduate Teaching Assistant 1997 – 2001
Department of Chemistry and Chemical Biology, Cornell University, Ithaca, NY
Electrochemistry (graduate class), Honors General Chemistry

Undergraduate Researcher 1995 – 1996
Advisor: Professor Robert F. Pasternack, Swarthmore College, Swarthmore, PA

Undergraduate Researcher Summer 1994
Advisor: Professor Joseph P. Dinnocenzo, University of Rochester, Rochester, NY

Undergraduate Teaching Assistant 1993 – 1996
Department of Chemistry, Swarthmore College, Swarthmore, PA
General, Inorganic and Physical Chemistry

PUBLICATIONS SINCE BEGINNING AT BRYN MAWR

- Klein, S. J.; Burgmayer, S. J. N; Goldsmith, J. I. "Synthesis, characterization and binding properties of a pyrene-terminated ruthenium polypyridyl complex towards DNA." **Manuscript in preparation.**
- Fealy, R.J.; **Melker, A.**; Goldsmith, J. I. "Photocatalytic water reduction with complexes containing multiple Iridium(III) phenylpyridine-bipyridine centers." **Manuscript in preparation.**
21. Li, M.; Takada, K.; Goldsmith J. I.; Bernhard S. "Iridium(III) bis-pyridine-2-sulfonamide complexes as efficient and durable catalysts for homogeneous water oxidation." *Inorg. Chem.* **Published online 9/10/15**
 20. Lerner, M. B.; Reczenski, J. M.; Amin, A.; Johnson, R.; Goldsmith J. I.; Johnson, A. T. "Towards quantifying the electrostatic transduction mechanism in carbon nanotube molecular sensors." *J. Am. Chem. Soc.*, **2012**, *134*(35), 14318-14321.
 19. Fealy, R. J. and Goldsmith J. I. "Investigating electron transfer in macromolecular ruthenium tris(bipyridyl) complexes using collection experiments at a rotating ring-disc electrode." *J. Phys. Chem. C.*, **2012**, *116* (24), 13133-13142.
 18. Oze, C.; Jones, L. C.; Goldsmith, J. I.; and Rosenbauer, R. J. R. "Differentiating biotic from abiotic methane genesis in hydrothermally active planetary surfaces." *Proc. Nat. Acad. Sci.*, **2012**, *109* (25), 9750-9754.
 17. Jones, L. C.; Rosenbauer, R.; Goldsmith, J. I.; Oze, C. "Carbonate control of H₂ and CH₄ production in serpentinization systems at elevated P-Ts." *Geophysical Research Letters*, **2010**. *37*, L14306.
 16. Goldsmith, J. I.; Smith, H. L.; Usala, R. L.; McQueen, E. W. "Novel polyaromatic-terminated transition metal complexes for the functionalization of carbon surfaces." *Langmuir*, **2010**, *26* (5), 3342-3349.
 15. Goldsmith, J. I.; McQueen, E. W. "Electrochemical analysis of single-walled carbon nanotubes functionalized with pyrene-pendant transition metal complexes." *J. Am. Chem. Soc.* **2009**, *131* (48), 17554-17556.
 14. Lowry, M. S.; Goldsmith, J. I.; Slinker, J. D.; Pascal, R. A. Jr.; Malliaras, G. G.; Bernhard, S. "High Energy Emission from a Single-Layer Iridium (III) Electroluminescent Device." *Chem. Mat.* **2005**; *17*(23); 5712-5719.

PUBLICATIONS PRIOR TO BEGINNING AT BRYN MAWR

13. Goldsmith, J.I.; Hudson, W.R.; Lowry, M.S.; Bernhard, S. "Discovery and High-Throughput Screening of Heteroleptic Iridium Complexes for Photo-Induced Hydrogen Production." *J. Am. Chem. Soc.*, **2005**, *127(20)*, 7502-10.
12. Sydora, O.L.; Goldsmith, J.I.; Vaid, T. P.; Miller, A. E.; Wolczanski, P. T.; and Abruña, H. D. "Syntheses and electrochemistry of (*p*-XC₆H₄O)₆W (1-X, X = H, CH₃, OCH₃, Cl, Br, OH, OCH₂Ph) and (*p*-XC₆H₄O)₅W(OC₆H₄OH) (X = H, CH₃, OCH₃, Cl, Br): an approach to electrocatalytic CH bond activation." *Polyhedron*, **2004**, *23(11)*, 2841-56.
11. Takada, K.; Goldsmith, J.I.; Bernhard, S.; Abruña, H.D. "Dendrimers on Electrodes" in Encyclopedia of Electrochemistry, Volume 10, A.J. Bard and M. Stratmann, editors WILEY-VCH, Weinheim, Berlin, **2004**.
10. Bernhard, S.; Goldsmith, J.I.; Takada, K.; Abruña, H.D. "Iron (II) and Copper(I) Coordination Polymers: Electrochromic Materials with and without Chiroptical Properties." *Inor. Chem.*, **2003**, *42(14)*, 4389-93.
9. Amatore, C.; Bouret, Y.; Maisonhaute, E.; Abruña, H.D.; Goldsmith, J.I. "Electrochemistry within Molecules Using Ultrafast Cyclic Voltammetry." *Comptes Rendus Chemie*, **2003**, *6(1)*, 99-115.
8. Park, J.; Pasupathy, A.N.; Goldsmith, J.I.; Soldatov, A.V.; Chang, C.; Yaish, Y.; Sethna, J.P.; Abruña, H.D.; Ralph, D.C.; McEuen, P.L. "Wiring up Single Molecules." *Thin Solid Films*, **2003**, *438-439*, 457-461.
7. Park, J.; Pasupathy, A.N.; Goldsmith, J.I.; Chang, C.; Yaish, Y.; Petta, J.R.; Rinkoski, M.; Sethna, J.P.; Abruña, H.D.; McEuen, P.L.; Ralph, D.C. "Coulomb Blockade and the Kondo Effect in Single Atom Transistors." *Nature*, **2002**, *417*, 722-725.
6. Goldsmith, J.I.; Takada, K.; Abruña, H.D. "Probing Diffusional Transport in Redox-active Dendrimers." *J. Phys. Chem B.*, **2002**, *106(34)*, 8504-8513.
5. Amatore, C.; Bouret, Y.; Maisonhaute, E.; Goldsmith, J.I.; Abruña, H.D. "Precise Adjustment of Nanometric-Scale Diffusion Layers Within a Redox Dendrimer Molecule By Ultrafast Cyclic Voltammetry: an Electrochemical Nanometric Microtome." *Chem--Eur.J.*, **2001**, *7 (10)*, 2206-2226.
4. Amatore, C.; Bouret, Y.; Maisonhaute, E.; Goldsmith, J.I.; Abruña, H.D. "Ultrafast Voltammetry of Adsorbed Redox Active Dendrimers with Nanometric Resolution: An Electrochemical Microtome." *ChemPhysChem*, **2001**, *2 (2)*, 130-134.
3. Takada, K.; Storrer, G.D.; Goldsmith, J.I.; Abruña, H.D. "Electrochemical and Adsorption Properties of PAMAM Dendrimers Surface-Functionalized with Polypyridyl Cobalt Complexes." *J. Phys. Chem. B*, **2001**, *105*, 2404-2411.

PUBLICATIONS PRIOR TO BEGINNING AT BRYN MAWR(cont.)

2. Pasternack, R.F.; Goldsmith, J.I.; Szep, S.; Gibbs, E.J. "A Spectroscopic and Thermodynamic Study of Porphyrin/DNA Supramolecular Assemblies." *Biophys.J.*, **1998**, 75, 1024-31.
1. Potter, T.L.; Fagerson, I.S.; Goldsmith, J.I. "Mysteries of Maple Syrup Flavor." *Maple Syrup Digest*, **1995**, 7A (2), 9-13.

PRESENTATIONS SINCE BEGINNING AT BRYN MAWR

“Synthesis, Electrochemistry and Utilization as Light Harvesting Catalysts of Ruthenium and Iridium Complexes Containing Multiple Metal Centers.” Ryan J. Fealy and Jonas I. Goldsmith. Oral presentation by Ryan Fealy at the 244th National Meeting of the American Chemical Society, Philadelphia, PA August 22th 2012.

“Synthesis and Characterization of a Novel Pyrene-terminated Ruthenium Polypyridyl Complex that Mediates the Photocleavage of DNA.” Samantha K. Jones, Sharon N. Burgmayer, Jonas I. Goldsmith. Poster presented at the 244th National Meeting of the American Chemical Society, Philadelphia, PA August 19th 2012.

“Synthesis, Characterization and DNA Photocleavage of a Novel Pyrene Terminated Ruthenium Polypyridyl Complex.” Samantha Klein, Jonas I. Goldsmith, Sharon N. Burgmayer. Poster presented at the 12th Annual Student Poster Session of the Philadelphia section of the American Chemical Society, Philadelphia, PA, February 23, 2012.

“Synthesis and electrochemical studies of ruthenium and iridium complexes containing multiple metal centers.” Ryan, J. Fealy and Jonas I. Goldsmith. Poster presented at the 12th Annual Student Poster Session of the Philadelphia section of the American Chemical Society, Philadelphia, PA, February 23, 2012. **Tied for 2nd/3rd place!**

“Photocatalytic hydrogen production of multimetallic Ir complexes.” Anna Melker and Jonas I. Goldsmith. Poster presented at the 12th Annual Student Poster Session of the Philadelphia section of the American Chemical Society, Philadelphia, PA, February 23, 2012.

“Using Chronoamperometry to Examine Photochemical Reactions in Light Harvesting Systems.” Jonas I. Goldsmith. Poster presented at the Gordon Conference on Electrochemistry, Ventura CA, January 9-10, 2012.

“Using electrochemical techniques to probe photochemical water splitting.” Jonas I. Goldsmith. Oral presentation. Albright College, Reading, PA, October 27th 2011. Oral presentation

“Assessing the performance of single-component water reduction catalysts using coupled photochemical and electrochemical techniques.” Jonas I. Goldsmith. Oral presentation at the 242nd National Meeting of the American Chemical Society, Denver, CO, August 29th, 2011.

“Reactivity of mafic and ultramafic rocks with CO₂-charged fluids and the autocatalytic reduction of CO₂ to form CH₄.” R. J. Rosenbauer, C. Oze, L. C. Jones, B. Thomas, J. I. Goldsmith and J. L. Bischoff. Oral presentation by R. J. Rosenbauer. 2011 Goldschmidt Conference, Prague, Czech Republic, August 17th, 2011.

PRESENTATIONS SINCE BEGINNING AT BRYN MAWR (cont.)

“Synthesis and electrochemical studies of ruthenium complexes containing multiple metal centers.” Ryan Fealy and Jonas I. Goldsmith. Poster presented at the Middle Atlantic Regional Meeting of the American Chemical Society, College Park, MD, May 23, 2011

“Applying Electrochemical Techniques to Nanoscience and Solar Energy Conversion.” Jonas I. Goldsmith. Oral presentation. Connecticut College, New London, CT, February 15, 2011.

“Catalysis of Methane Production in Serpentinization Systems.” L. Camille Jones, Christopher Oze, Jonas I. Goldsmith and Robert J. Rosenbauer. Poster presented at the American Geophysical Union National Meeting, San Francisco, CA, December 14, 2010.

“Probing light harvesting with photo-induced chronoamperometry.” Jonas I. Goldsmith. Oral presentation at Middle Atlantic Regional Meeting of the American Chemical Society, Wilmington, DE April 11, 2010.

“Selective noncovalent functionalization of glassy carbon with cobalt (II) terpyridyl complexes.” Jonas I. Goldsmith. Oral presentation at the 237th National Meeting of the American Chemical Society, Salt Lake City, UT, March 22, 2009.

“Modification of single-walled carbon nanotubes with transition metal complexes.” Jonas I. Goldsmith. Oral presentation at the 237th National Meeting of the American Chemical Society, Salt Lake City, UT, March 26, 2009.

“Two Variations on the Theme of Electron Transfer: Surface Modification and Solar Energy Conversion.” Jonas I. Goldsmith. Oral presentation at Swarthmore College, Swarthmore PA, September 20, 2007.

“Non-covalent adsorption of polypyridyl complexes to carbon surfaces: synthesis and electrochemistry of a family of Co(II) complexes with pendant polyaromatic functionalities.” Rachel L. Usala, Eden McQueen, Hillary L. Smith and Jonas I. Goldsmith. Poster presented at the Middle Atlantic Regional Meeting of the American Chemical Society, Collegeville, PA May 16, 2007.

“Heteroleptic ruthenium (II) terpyridine complexes for the non-covalent functionalization of glassy carbon surfaces.” Samira Zamani and Jonas I. Goldsmith. Poster presented at the Middle Atlantic Regional Meeting of the American Chemical Society, Collegeville, PA May 16, 2007.

“Control of Carbon Surface Modification via Ligand Modifications.” Hillary Smith, Rachel Usala, Eden McQueen, Jonas I. Goldsmith. Poster presented at the Gordon Conference on Electrochemistry, Ventura CA, January 15, 2007.

“Introduction to Nanoscience” Lego Robotics Team *Rage Against the Machine* (grade school students). Oral presentation. July 27, 2006

PRESENTATIONS SINCE BEGINNING AT BRYN MAWR (cont.)

Panelist “Science of Energy: Is there an Alternative to Fossil Fuels” at “Conference on Energy Insecurity: Fuel for Conflict.”, Haverford College, April 1, 2006.

“Transition Metal Complexes for Light Harvesting and Nano-scale Surface Functionalization.” Jonas I. Goldsmith. Oral presentation at Haverford College, Haverford, PA. February 10, 2006

GRANTS AND AWARDS

Designing Materials to Revolutionize and Engineer our Future Grant (DMREF) (co-PI) (\$141,000) National Science Foundation “Collaborative Research: Light-Rechargeable Electrical Energy Storage Devices via Redox-Gradient Assemblies”	Pending
HHMI New Directions Grant (\$17445) Bryn Mawr College, Bryn Mawr, PA Awarded by the HHMI Award Committee for investigating the kinetics of photocatalytic water reduction by experimental and computational techniques.	2014-2016
Faculty Research Grant (\$3500) Bryn Mawr College, Bryn Mawr, PA Awarded by the Committee on Faculty Awards and Grants for investigating the use of macromolecular iridium-based photosensitizers for the reduction of water to hydrogen.	2012-2013
Major Research Instrumentation Grant (co-PI) (\$263,900) National Science Foundation “400 MHz NMR Acquisition”	2010-2013
Faculty Research Grant (\$4900) Bryn Mawr College, Bryn Mawr, PA Awarded by the Committee on Faculty Awards and Grants for developing methodologies to conduct electrochemical experiments at edge-plane pyrolytic graphite surfaces.	2009-2010
Type G Starter Grant (\$40,000) Petroleum Research Fund of the American Chemical Society “Rational Self Assembly of Macromolecular Arrays for Optimized Light Harvesting and Photocatalytic Hydrogen Production”	2007-2011
Faculty Research Grant (\$3746) Bryn Mawr College, Bryn Mawr, PA Awarded by the Committee on Faculty Awards and Grants for the construction of a multi-well apparatus to examine the photocatalytic reduction of water to hydrogen.	2007-2008
PCNMCG Instrument Grant (\$9,000) Pittsburgh Conference National Memorial College Grant Program Grant for the purchase of a bipotentiostat and rotating ring-disc electrodes	June 2006
Faculty Start-up Award (\$30,000) Camille and Henry Dreyfus Foundation “Non-covalent functionalization of single-walled carbon nanotubes via molecular interfaces based on polypyridyl transition metal complexes”	2005-2011

GRANTS AND AWARDS (cont.)

Faculty Research Grant

May 2003

Hobart and William Smith Colleges, Geneva, NY

Awarded by the Committee on Faculty Research and the Provost to support research on electron transfer in linear macromolecular transition metal complexes

Wentink Outstanding Graduate Student Award

April 2002

Department of Chemistry and Chemical Biology, Cornell University, Ithaca, NY

Awarded to graduate students who have distinguished themselves both academically and in the quality and quantity of their research

Stanley Adamson Prize in Chemistry

May 1995

Department of Chemistry, Swarthmore College, Swarthmore, PA

Awarded to the outstanding junior in the Chemistry Department

PROFESSIONAL ORGANIZATIONS

- American Chemical Society

COURSES TAUGHT

- **CHEM 101** Chemistry Fundamentals
- **CHEM 103** General Chemistry I
- **CHEM 104** General Chemistry II
- **CHEM 206** Science of Renewable Energy
- **CHEM 222** Physical Chemistry II
- **CHEM 251** Research Methodology I
- **CHEM 252** Research Methodology II
- **CHEM 321/521** Advanced Physical Chemistry: Topics in Nanoscience
- **CHEM 321/521** Advanced Physical Chemistry: Inorganic Photochemistry
- **ENVS 397** Senior Seminar in Environmental Studies

SERVICE ACTIVITIES AT BRYN MAWR

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|---|----------------|
| • Physical Chemist Search Committee (Haverford College) | 2005 |
| • Science Node Representative | 2005-2009 |
| • Chemistry Colloquium Coordinator | 2005, -09, -11 |
| • Director of Graduate Studies in Chemistry | 2006, -13, -15 |
| • Chemistry Representative to Environmental Studies Concentration | 2006-present |
| • Committee on Libraries, Information Services and Computing | 2007-10 |
| • Physical Chemist Search Committee (Haverford College) | 2007 |
| • Volunteer Advisor for first year students | 2007 - present |
| • Physicist Search Committee (Bryn Mawr College) | 2009 |
| • Bucher-Jackson Postdoctoral Fellowship Search Committee | 2010 |
| • Organic Chemist Search Committee (Bryn Mawr College) | 2010 |
| • Chemistry Placement Exam Coordinator | 2011-13 |
| • Faculty Representative to the Task Force on the Competitive Position
of the College (Market Position Subcommittee) | 2011 |
| • Committee on Academic Priorities Working Group on Faculty Workload | 2011 |
| • Gates/NGLC Blended Learning Grant Participant | 2011-12 |
| • Organic Chemist Search Committee (Bryn Mawr College) | 2011 |
| • Premedical Curriculum Working Group | 2012 |
| • Biochemist Search Committee – Chair (Bryn Mawr College) | 2012 |
| • Faculty Advisor (pilot program) to first year students | 2012-2014 |
| • Athletic Department Faculty Fellow | 2013-present |
| • Ad hoc Committee on Faculty Advising | 2013 |
| • General Chemistry Lab Instructor Search Committee (Bryn Mawr College) | 2014 |
| • Representative to the Administrative Board of the Academic Honor System | 2015-2018 |
| • Quantitative Steering Committee | 2015-present |
| • Committee on Academic Priorities | 2015-2019 |
| • General Chemistry Lab Instructor Search Committee (Bryn Mawr College) | 2015 |
| • Field Hockey Head Coach Search Committee (Bryn Mawr College) | 2016 |

SERVICE TO THE PROFESSION

- Textbook Reviewer for Academic Press 2005
- Reviewer for the *Journal of Electroanalytical Chemistry* 2005-present
- Proposal Reviewer for NSF Inorganic Division 2007-present
- Proposal Reviewer for NSF Macromolec/Supramolec/Nano Divison 2009-present
- Reviewer for *Carbon* 2011-present
- Reviewer for *Langmuir* 2011-present
- Proposal Reviewer for the Petroleum Research Fund of the American Chemical Society (ACS-PRF) 2012-present
- Reviewer for *Coordination Chemistry Reviews* 2012-present
- Reviewer for the *Journal of Physical Chemistry* 2013-present
- Reviewer for the *Journal of Physical Chemistry Letters* 2013-present
- Reviewer for the *Journal the American Chemical Society* 2015-present

RESEARCH STUDENTS

- Hillary Smith '06
- Rachel Usala '07
- Samira Zamani '07
- Danielle Carlin '07
- Amy Case '08
- Eden McQueen '09
- Suzanne Ali, '09
- Erica Lo '09
- Maggie Ahrens '12
- Anna Melker '12
- Julia Heer '14
- Callista Jerman '15
- Katie Guye '15
- Audrey Burnim '17
- Muhui Chen '17
- Kristin Kurek (GS) M.A. 2008
- Ryan Fealy (GS) Ph.D. 2014
- Samantha Klein (GS) Ph.D. expected 2016
- Michele Seiler (GS) M.A. expected 2016

GRADUATE STUDENT COMMITTEES SERVED ON

- Matthew Wampole (Ph. D. Chemistry 2009)
- Shannon Dalton (Ph. D. Chemistry 2009)
- Kelly Ginion (Ph. D. Chemistry 2009)
- Matthew Fury (Ph. D. Mathematics, 2010) – served as outside chair of committee
- Alyssa Bohlen (Ph.D. Chemistry, 2013)
- Benjamin Williams (M.A. Chemistry 2011, Ph.D Chemistry 2015)
- Toni Mandelbaum (Ph. D. Social Work and Social Research, 2016) – served as outside chair of committee
- Maria DeMurro Winters (Ph. D. Chemistry 2014)
- Douglas Gisewhite (M.A. Chemistry 2013, Ph. D. expected 2017)
- Nissa Abidi (M.A. Chemistry 2015)