

Chemistry Undergraduate/Graduate Research Presentations and Publications

Undergraduate/Graduate / Faculty Mentor

Peer-reviewed publications with undergraduate co-authors: 2014-2015

Li, W.; Liu, Z.; Wu, H.; Cheng, Y.-B.; Zhao, Z.*; He, H.* Thiophene-functionalized porphyrins: synthesis, photophysical properties and photovoltaic performance in dye-sensitized solar cells, *J. Phys. Chem. C*, **2015**, *119*, 5265-5273.

Liu, Z.; Zhang, M.; Xu, X.; Bu, L.; Zhang, W.; Li, W.; Zhao, Z.*; Wang, M.; Cheng, Y.-B.; He, H.* p-Type mesoscopic NiO as an active interfacial layer for carbon counter electrode based perovskite solar cells, *Dalton Trans.*, **2015**, *44*, 3967-3973.

Li, W., Liu, Z., Xu, X., Cheng, Y.-B., Cheng, Zhao, Z.*, He, H.* Near-infrared absorbing porphyrin dyes with perpendicularly extended π conjugation for dye-sensitized solar cells, *RSC Advances*, **2014**, *4*, 50897-50905.

Si, L., He, H.*, and Zhu, K., 8-Hydroxylquinoline-conjugated porphyrins as broadband light absorbers for dye-sensitized solar cells, *New J. Chem.*, **2014**, *38*, 1565-1572.

Si, L., He, H.*, Porphyrin dyes on TiO₂ surface with different orientations: a photophysical, photovoltaic and theoretical investigation, *J. Phys. Chem. A*, **2014**, *118*, 3410-3418.

Liu, Z., Li, W., Topa, S., Xu, X., Zeng, X., Zhao, Z.*, Wang, M.*, Chen, W., Wang, F., Cheng, Y.-B., and He, H.*, Fine tuning of fluorene-based dye structures for high-efficiency p-type dye-sensitized solar cells, *ACS Appl. Mater. & Interfaces*, **2014**, *6*, 10614-10622.

Li, W., Si, L., Liu, Z., Wu, H., Zhao, Z.*, Cheng, Y., He, H.*, Bis(9,9-dihexyl-9H-fluorene-7-yl)amine (BDFA) as a new donor for porphyrin-sensitized solar cells, *Org. Electronics*, **2014**, *15*, 2448-2460

Li, W., Si, L., Liu, Z., Zhao, Z.*, Cheng, Y.-B., He, H.*, Zhu, K., and Moore, B. Fluorene functionalized porphyrins as broadband absorbers for TiO₂ nanocrystalline solar cells, *J. Mater. Chem. A*, **2014**, *2*, 13667.

He, H.*, Near-infrared emitting lanthanide complexes of porphyrin and BODIPY dyes, *Coord. Chem. Rev.*, **2014**, *273-274*, 87-99.

Liu, Z., Xiong, D., Xu, X., Arooj, Q., Wang, H., Yin, Y., Li, W., Wu, H., Zhao, Z.*, Chen, W., Wang, M., Wang, F., Cheng, Y., He, H.*, Modulated charge injection in p-type dye-sensitized solar cells Using fluorene-based light absorbers, *ACS Applied Materials & Interfaces*, **2014**, *6*, 3448-3454.

Periyannan, G.R.; Lawrence, B.A.; Egan, A.E. ¹H-NMR Spectroscopy-Based Configurational Analysis of Mono- and Disaccharides and Detection of β -Glucosidase Activity: An Undergraduate Biochemistry Laboratory, *J. Chem. Educ.* **2015**, DOI: 10.1021/ed500578c.

V.M. Gun'ko*, V.V. Turov, I.F. Myronyuk, O.V. Goncharuk, E.M. Pakhlov, N.A. Bezruka, E. Skwarek, W. Janusz, J.P. Blitz; Interfacial Phenomena at a Surface of Partially Silylated Nanosilica" *Journal of Colloid and Interface Science* **2014**, *414*, 28-39.

J.P. Blitz*, V.M. Gun'ko, R. Samala, B.A. Lawrence; Mixed Bifunctional Surface-Modified Silicas Using Tethered Aminofunctional Silane Catalysts *Colloids and Surfaces A: Physicochemical and Engineering Aspects* **2014**, *462*, 1-8.

Kerrigan, N.; Peraino, N.; Wheeler, K. A. "Diastereoselective Synthesis of γ -Lactones through Reaction of Ene-diols with α,β -Unsaturated Sulfoxonium Salts," *Organic Letters* **2015**, *17*, 1735-1737.

Bewick, N. A.; Arendt, A.; Li, Y.; Szafert, S.; Lis, T.; Wheeler, K. A.; Young, J.; Dembinski, R. "Synthesis and Solid-State Structure of (4-Hydroxy-3,5-diiodophenyl)phosphine Oxides. Dimeric Motifs with the Assistance of O-H...O=P Hydrogen Bonds," *Current Organic Chemistry* **2015**, *19*, 469-474.

Cross, J. T.; Rossi, N. A.; Serafin, M. F.; Wheeler, K. A. "Tröger's Base Quasiracemates and Crystal Packing Tendencies," *Crystal Engineering Communications* **2014**, *16*, 7251-7258. (Invited Contribution to the Thematic Issue on the International Year of Crystallography)

Chen, S.; Mondal, M.; Ibrahim, A. A.; Wheeler, K. A.; Kerrigan, N. J. "Phosphine Catalyzed Asymmetric Synthesis of β -Lactones from Disubstituted Ketenes and Aldehydes," *Journal of Organic Chemistry* **2014**, *79*, 4920-4929.

Liu, L.; Daka, P.; Sarkisian, R.; Deng, Y.; Wheeler, K.; Wang, H. "Oxa-Diels-Alder Reaction of Isatins and Acyclic α,β -Unsaturated Methyl Ketones through Cooperative Dienamine and Metal Lewis Acid Catalysis," *Synthesis* **2014**, *46*, 1339-1347.

C.L. Christenholz, D.A. Obenchain, R.A. Peebles, S.A. Peebles* Rotational Spectroscopic Studies of C-H...F Interactions in the Vinyl Fluoride...Difluoromethane Complex, C.L. Christenholz, D.A. Obenchain, R.A. Peebles, S.A. Peebles,* *J. Phys. Chem. A* **2014**, *118*, 1610-1616.

N.W. Ulrich, N.A. Seifert, R.E. Dorris, R.A. Peebles, B.H. Pate, S.A. Peebles* Benzene...acetylene: a structural investigation of the prototypical CH... π interaction, *Phys. Chem. Chem. Phys.* **2014**, *16*, 8886-8894. "Hot Article"

C.L. Christenholz, R.E. Dorris, R.A. Peebles, S.A. Peebles* Characterization of Two Isomers of the Vinyl Fluoride...Carbon Dioxide Complex by Rotational Spectroscopy, *J. Phys. Chem. A* **2014**, *118*, 8765-8772.

Karagas NE, Jones CN, Osborn DJ, Dzierlenga AL, Oyala P, Konkle ME, Whitney EM, David Britt R, Hunsicker-Wang LM The Reduction Rates of DEPC-modified mutant *Thermus thermophilus* Rieske Proteins Differ When There is a Negative Charge Proximal to the Cluster *Journal of Biological Inorganic Chemistry* **2014**, *19*, 1121-1135.

Coons, J.; Coutant, N.; Lawrence, B.; Finn, D.; Finn, S. An Effective System to Produce Smoke Solutions from Dried Plant Tissues for Seed Germination Studies, *Applications in Plant Sciences* **2014**, *2*(3).

Presentations at Meetings

2015 Materials Research Society Spring Meeting, April 6-9, San Francisco, CA

Title: Structural Modification of Porphyrin Dyes for Efficient Conversion of Solar Energy to Electricity.

Author: [Hongshan He](#)

The 2015 ACS Great Lakes Regional Meeting, May 27-30, Grand Rapids, MI

Title: BODIPY Palladium Complexes as Photocatalysts for C-C Coupling.

Authors: [Brad Krzesinski](#), [Hongshan He](#)

The 2015 ACS Great Lakes Regional Meeting, May 27-30, Grand Rapids, MI

Title: Acrylic Acid Functionalized Porphyrins for Dye-Sensitized Solar Cells. Xiangli Wang (EIU Visiting Chemistry Professor),

Authors: [Hafsah Klfout](#), [Michael Salinas](#), [Hongshan He](#)

The 2015 ACS Great Lakes Regional Meeting, May 27-30, Grand Rapids, MI

Title: BODIPY Sensitizers for Dye-Sensitized Solar Cells.

Authors: [Hafsah Klfout](#), Xiangli Wang, [Hongshan He](#)

The 2015 ACS Great Lakes Regional Meeting, May 27-30, Grand Rapids, MI

Title: Formation of a Trimeric Calix[4]arene by Self-Assembling with a Template.

Authors: [Eric Brown](#), [Hongshan He](#)

The 2015 ACS Great Lakes Regional Meeting, May 27-30, Grand Rapids, MI

Title: Unusual Particle Growth at Perovskite Type Electrodes Driven by Wet Electrochemistry at Room Temperature.

Authors: [Shuxin Luo](#), [Svetlana Mitrovski](#)

NCUR Meeting, April 2014, University of Kentucky

Title: Aromatic Hydrocarbon Metabolism by *Caulobacter crescentus*.

Authors: [Funk D. M.](#), [Walker, S.M.](#), [Landry Umbu](#), [Martin, B.S.](#), [Periyannan, G.R.](#)

42nd Annual National Conference: Thinking about Tomorrow: Collective Bargaining and Labor Relations in Higher Education – April 19-21, 2015, Hunter College, NY.

[J.P. Blitz](#) - Panelist: "Higher Education Scorecards, Performance Based Metrics and Faculty Compensation"

NCUR Meeting, April 2015, Eastern Washington University
Title: Functional Molecular Crystals by Redirecting Symmetry
Authors: [Schutzbach, M. E.](#); [Wheeler, K. A.](#)

NCUR Meeting, April 2015, Eastern Washington University
Title: Controlled Photopolymerization Reactions in Molecular Crystals
Authors: [Lewis, M.](#); [Wheeler, K. A.](#)

NCUR Meeting, April 2015, Eastern Washington University
Title: Centnezwer a Hundred Years Later: New Additions to An old story
Authors: [Spaniol, J.](#); [Wheeler, K. A.](#)

NCUR Meeting, April 2015, Eastern Washington University
Title: Investigation of Ionic Interactions as Models of Biochemical Systems and Chemical Reaction Mechanisms
Authors: [Rachel E. Dorris](#), [Rebecca A. Peebles](#), [Sean A. Peebles](#)

249th ACS National Meeting & Exposition, Denver, CO March 22-26 2015
Title: Structures and CH...O Interactions of Fluorinated Ethylene...Carbon Dioxide Complexes as Determined by Microwave Spectroscopy
Authors: [Rachel E. Dorris](#) , [Cori L. Christenholz](#) , [Ashley M. Anderton](#) , [Rebecca A. Peebles](#) , [Sean A. Peebles](#)

249th American Chemical Society National Meeting, Denver, CO, March 21-24, 2015
Title: Synthesis and Characterization of BIAN Iron Dihalide Complexes
Authors: [Supej, M.](#); [Wheeler, K. A.](#), [Schulz, C.](#); [Hoyt, H.](#)

249th American Chemical Society National Meeting, Denver, CO, March 21-24, 2015
Title: New Frontiers in Organizing Crystals by Molecular Shape
Authors: [Schutzbach, M. E.](#); [Wheeler, K. A.](#)

249th American Chemical Society National Meeting, Denver, CO, March 21-24, 2015
Title: Investigation of chemical interferences in vehicle arson accelerant identification
Authors: [Humphrey, L.](#); [Klarup, D. G.](#)

248th ACS National Meeting, San Francisco, CA, August 10-14, 2014
Title: Starburst Pseudorotaxanes Based on Benzobis(imidazolium) Salts and Crown Ethers
Authors: [Semeniuc, Radu F.](#); [Foster, Matthew W.](#); [Mehl, Benjamin T.](#); [Treadwell, Edward M.](#); [Wheeler, Craig A.](#)

69th International Symposium on Molecular Spectroscopy University of Illinois Urbana-Champaign, June 2014.
Title: Preference for Top- vs. Side-Binding in Fluorinated Ethylene...CO₂ Complexes
Authors: [R.A. Peebles](#), [A.M. Anderton](#), [C.L. Christenholz](#), [R.E. Dorris](#), [S.A. Peebles](#)

69th International Symposium on Molecular Spectroscopy University of Illinois Urbana-Champaign, June 2014.

Title: Chirped-Pulse Fourier-Transform Microwave Spectroscopy of The Prototypical C-H...² Interaction: The Benzene...Acetylene Weakly Bound Dimer

Authors: [N.W. Ulrich](#), [N.A. Seifert](#), [R.E. Dorris](#), [R.A. Peebles](#), [S.A. Peebles](#), B.H. Pate

70th International Symposium on Molecular Spectroscopy University of Illinois Urbana-Champaign, June 2015. (scheduled presentation)

Title: Assignment of the Microwave Spectrum of 1,2-Difluorobenzene...HCCH: Lessons Learned from Analysis of a Dense Broadband Spectrum

Authors: [Anuradha Akmeemana](#), [Rebecca D. Nelson](#), [Mikayla L. Grant](#), [Rebecca A. Peebles](#), [Sean A. Peebles](#), [Justin M. Kang](#), [Nathan A. Seifert](#), Brooks H. Pate

70th International Symposium on Molecular Spectroscopy University of Illinois Urbana-Champaign, June 2015. (scheduled presentation)

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Authors: [Anuradha Akmeemana](#), [Rebecca D. Nelson](#), [Mikayla L. Grant](#), [Rebecca A. Peebles](#), [Sean A. Peebles](#), [Justin M. Kang](#), [Nathan A. Seifert](#), Brooks H. Pate

70th International Symposium on Molecular Spectroscopy University of Illinois Urbana-Champaign, June 2015. (scheduled presentation)

Title: Structure Determination and CH...F Interactions in H₂C=CHF...H₂C=CF₂ by Fourier-Transform Microwave Spectroscopy

Authors: [Rachel E. Dorris](#), [Rebecca A. Peebles](#), [Sean A. Peebles](#)

Protein Society, July 2014, San Diego, CA

Title: Chemical Modification of MitoNEET

Authors: [M. Laffoon](#), M.A. Menze, [M.E. Konkle](#)

Protein Society, July 2014, San Diego, CA

Title: Determining the Effects of MitoNEET on Cellular Dehydrogenase Activity

Authors: [S.E. Banister](#), [M. Woodruff](#), [P. Birge](#), M.A. Menze, [M.E. Konkle](#)

American Society for Cell Biology, Dec. 2014 Philadelphia, PA

Title: The Effects of Pioglitazone on Liver Cell Bioenergetics

Authors: [D.F. Grimm](#), [L. Altamirano](#), [J. Herrera](#), [S. Paudel](#), [M.E. Konkle](#), M.A. Menze

Other Presentations

Invited talk: [Hongshan He](#), Dye-Sensitized Solar Cells. *Department of Electrical Engineering, Texas Tech University*, November 13, 2014.

Invited talk: [Hongshan He](#), Photoactive Materials for Solar Energy Conversion, *Department of Chemistry, University of Mississippi*, October 24, 2014.

Invited talk: [Kraig A. Wheeler](#), Functionally Interesting Molecular Crystals: New Additions to Old Stories, *Southern Illinois University Edwardsville*, February 12, 2015.

Invited talk: [Kraig A. Wheeler](#), Capturing Chemical Reactions in Molecular Crystals, *Amherst College, Amherst, MA*, November 7, 2014.

Invited talk: [Kraig A. Wheeler](#), Capturing Chemical Reactions in Molecular Crystals, *Knox College, Galesburg, IL*, October 16, 2014.

External Grants (Funded)

BODIPY-Pd Complexes for Photocatalytic C-C Coupling Reactions, *The Petroleum Research Fund (Type UR) of the American Chemical Society*, **\$70,000**; Grant Period: 09/2014-08/2017.
[Hongshan He \(PI\)](#).

Microwave Spectroscopic Studies of Transition Metal Complexes Prepared by Laser Ablation, *Henry Dreyfus Teacher-Scholar Award*, **\$60,000**; Grant Period: 8/2009 – 10/2014.
[Sean Peebles \(PI\)](#)

Spectroscopic Studies of Halogen Substitution Effects on Covalent and Non-covalent Interactions in Ionic and Neutral Species, *National Science Foundation Research at Undergraduate Institutions(NSF-RUI)*, **\$262,917**; Grant Period: 7/2012 – 8/2015
[Rebecca Peebles \(co-PI\)](#), [Sean Peebles \(co-PI\)](#)

External Grants (Pending)

Acquisition of a Thin Film Deposition Glove System for Interdisciplinary Research and Education, *National Science Foundation MRI* **\$238,378**; Submitted: 1/1/2015.
[Hongshan He](#), [Peter Liu](#), [Kraig Wheeler](#), [Dan Sheeran](#)

Mapping the Structural Boundaries of Quasiracemate Fractional Crystallization, *American Chemical Society - Petroleum Research Fund*, **\$70,000**; Submitted: 9/1/2014. [Kraig Wheeler](#)

Synthesis and Characterization of Neutral Diiron (II) Metal Complexes as Precursors for High-Valent Diiron Species, *American Chemical Society - Petroleum Research Fund*, **\$70,000**; Submitted: 10/1/2014. [Radu Semeniuc](#)

Probing Molecular Recognition Profiles via Quasiracemic Materials, *National Science Foundation RUI*, **\$317,998**; Submitted: 10/1/2014. [Kraig Wheeler](#)

Near-Infrared Emitting Lanthanide Complexes and Their Metallopolymers, *National Science Foundation RUI*, **\$267,973**; Submitted: 10/1/2014. [Hongshan He](#)

A Mechanistic Investigation on How the Redox Chemistry of MitoNEET Regulates Energy Homeostasis on Cellular and Molecular Levels, *National Science Foundation RUI*, **\$368,419**; Submitted: 10/1/2014. [Mary Konkle](#), [Michael Menze \(BIO\)](#)

Acquisition of a Laser Confocal Microscope, *National Science Foundation MRI*, **\$436,413**;
Submitted: 1/1/2015. Gary Bulla (BIO), [Mary Konkle](#), Michael Menze (BIO), Britto Nathan (BIO),
[Gopal Periyannan](#)

Internal (EIU) Grants

A Near-infrared Dye for Dye-sensitized Solar Cells, *EIU Council on Faculty Research Summer Award (2015)*, **\$4500**; [Hongshan He \(PI\)](#).

A Portable Tablet for General Chemistry Teaching, *EIU Redden Grant Award (2014)*, **\$4500**;
[Hongshan He \(PI\)](#).

Molecular Engineering of Broadband Light Absorbers for Dye-Sensitized Solar Cells, *EIU President's Research and Creative Activity Funds*, **\$20,000**, Grant Period: 06/2014-07/2015.
[Hongshan He \(PI\)](#).

Glucose Metabolism in *Caulobacter crescentus*: Unraveling the Secrets of Entner-Doudoroff Pathway, *EIU Council on Faculty Research Summer Award (2014)*, **\$4500**; [Gopal Periyannan \(PI\)](#).

Bacterial Transformation of Bio-Oil: A Source of Carbon Compounds for Renewable Energy and Material Production. *EIU Council on Faculty Research (2014)*, **\$3655**; [Gopal Periyannan \(PI\)](#).

Glutamate Carboxypeptidase II from *Caenorhabditis elegans*: an Efficient Model to Study Human Folic Acid Metabolism and Stroke Development, *EIU Council on Faculty Research Summer Award (2015)*, **\$4500**; [Gopal Periyannan \(PI\)](#).

Characterizing the Roles of MitoNEET and Pioglitazone in Neurological Tissues
Interdisciplinary Research in the Sciences (IRIS); [Mary E. Konkle](#), Michael Menze (BIO), Britto Nathan (BIO)

Automation of Data Collection, Facilitation of In-Lab Data Analysis, and Incorporation of Digital Demonstrations in Physical Chemistry Lab and Physical Chemistry Lecture Courses. *EIU Redden Grant Award (2014-2015)*, **\$1500** [Rebecca Peebles](#).

External Grants Awarded to Chemistry Students

Aromatic Hydrocarbon Metabolism of *Caulobacter crescentus*; *American Society of Microbiology Travel Award*, **\$500** (travel expenses to attend 115th ASM General Meeting in New Orleans, May 30 – June 2, 2015). [Suzanne Walker](#)

NSF Graduate Fellowship (3-years): [M. Schutzbach](#)

Internal (EIU) Grants Awarded to Chemistry Students

Glucose Metabolism in *Caulobacter crescentus*: Confirmation of Entner-Doudoroff Pathway Enzyme Functions; *Summer 2014 URSCA*, **\$3000** stipend/**\$500** supplies. [Erica Webster](#)

Xylan metabolism of *Caulobacter crescentus*: Source for Renewable Energy and Material.
College of Sciences Undergraduate Research Grant (Fall 2014), \$400 supplies. Andrew Hladilek

Summer 2014 URSCA Award: S. Kapper

Spring 2014 URSCA Awards: M. Schutzbach, S. Kapper

Spring 2015 SURE Award. R. Dorris

Summer 2015 URSCA Award: J. Spaniol

Research Students or Scholars Supervised

Undergraduates:

Kirk Salinas (Dr. He)

Brad Krzesinski (Dr. He)

Erica Webster (Dr. Periyannan/Dr. S. Peebles)

Xa Burton (Dr. Periyannan)

Patrick Revallo (Dr. Periyannan)

Phillip Krueger (Dr. Periyannan)

Olga Livshits (Dr. Treadwell)

Michael Wolf (Dr. Treadwell)

Sean Cunningham (Dr. Wheeler)

Rachael Johnson (Dr. Wheeler)

Megan Schutzbach (Dr. Wheeler)

Matt Lewis (Dr. Wheeler)

Amber Meyer (Dr. Wheeler)

Jacqueline Spaniol (Dr. Wheeler)

Savannah Kapper (Dr. McGuire)

Alex Sorlin (Dr. Sheeran)

Lauren Humphrey (Dr. Klarup)

Rachel Dorris (Dr. S. Peebles/Dr. R. Peebles)

Sarah Stettner (Dr. S. Peebles/Dr. R. Peebles)

Bailey Luce (Dr. S. Peebles/Dr. R. Peebles)

Justin Kang (Dr. S. Peebles/Dr. R. Peebles) – guest student from Oberlin College

Megan Laffoon (Dr. Konkle)

Jacqui Crail (Dr. Konkle)

Sarah Banister (Dr. Konkle)

Alex Kus (Dr. Konkle)

Paige Birge (Dr. Konkle)

Jaelen Myers (Dr. Konkle)

Derrick Meyer (Dr. Lawrence)

Hannah Drake (Dr. Sheeran/Dr. R. Keiter) – guest student from Western Illinois Univ.

Emilee Ellingsworth (Dr. He)

Alex Harper (Dr. Mitrovski)

Andrew Hladilek (Dr. Periyannan)

Molly Toennies (Dr. Semeniuc)

Aramis Smith (Dr. Semeniuc)

Ellen Wilson (Dr. Semeniuc)

Doug Rees (Dr. Semeniuc)
Brenton Hall (Dr. Treadwell)
Eric Brown (Dr. Yan)
Glen Curry (Dr. Yan)
Nicole Scott (Dr. Yan)
Quentin Jordan (Dr. Periyannan)

Graduate Students:

Hafsah Klfout (Dr. He)
Suzanne Walker (Dr. Periyannan)
Byron Ebbert (Dr. Treadwell)
Xiao Xiao (Dr. Treadwell)
Anuradha Akmeemana (Dr. S. Peebles)
Ashley Anderton (Dr. S. Peebles/Dr. R. Peebles)
Fran Hirschfelder – MSNS student (Dr. Konkle)
Peters Ebukuyo (Dr. He)
Shuxin Luo (Dr. Mitrovski)
Seri Kamari (Dr. R. Peebles)
Asela Dikkumbura (Dr. R. Peebles)
Mahmoud Elkhalfifa (Dr. He)
Guang Yang (Dr. Yan)
Ashley Hall (Dr. Semeniuc)
Adedayo Kukoyi

Collaborations, Consulting, or Contract Work

Yi-Bing Cheng, Department of Electrical Engineering, Monash University, Australia. ([Hongshan He](#))

Dr. Xinagli Wang (Assistant Professor of School of Chemistry and Chemical Engineering, South China University of Technology (SCUT), Guangzhou, China), EIU Visiting Research Scholar (July 1, 2014 – June 30, 2015). ([Hongshan He](#))

Dr. Aditi Das, Department of Comparative Biosciences, University of Illinois. ([Gopal Periyannan](#))

[Dr. Richard Keiter](#) – NMR analysis of dangling phosphine complexes. ([Ed Treadwell](#))

[Kraig A. Wheeler](#) – contract work with Jiva Pharmaceuticals; 20-30 academic collaborators who send crystal samples to EIU for X-ray analysis.

[Dr. S. Peebles/Dr. R. Peebles](#) - Prof. Brooks Pate, University of Virginia, VA.

[Dr. S. Peebles](#) - Prof. Garry Grubbs, Missouri University of Science and Technology, Rolla, MO

[Dr. S. Peebles](#) - Prof. Gamil Guirgis, College of Charleston, SC.

[Dr. S. Peebles/Dr. R. Peebles](#) - Prof. Jung-Jin Oh, Sookmyung Women's University, South Korea.

[Dr. S. Peebles/Dr. R. Peebles](#) - Prof. Isabelle Kleiner, Laboratoire Interuniversitaire des Systèmes Atmosphériques (LISA), Créteil.

[Dr. S. Peebles/Dr. R. Peebles](#) - Prof. Robert McMahon, Department of Chemistry, University of Wisconsin-Madison.

[Dr. S. Peebles/Dr. R. Peebles](#) - Prof. Nasser Moazzen-Ahmadi, University of Calgary Department of Physics, Canada.

[Dr. Mary Konkle](#) - Dr. Michael Menze , Dr. Britto Nathan (both from EIU Biological Sciences Dept.)

[Dr. Mary Konkle](#) - Dr. Jeff Watson, Gonzaga University

[Dr. Mary Konkle](#) - Dr. Werner Geldenhuys, Northeast Ohio Medical College

[Dr. Mary Konkle](#) - Dr. Nilay Chakraborty, University of Michigan – Dearborn

[Dr. Mary Konkle](#) - Dr. Mu Wang, Indiana University School of Medicine

[Dr. Barbara Lawrence](#) – Dr. Jon Blitz and Dr. Gopal Periyannan, EIU

[Dr. Barbara Lawrence](#) – Brian Stewart, Wesleyan University.