Samford University
Howard College of Arts and Sciences

Chemistry and Biochemistry Department
Faculty Sponsored Student Research

Significant experiential learning opportunities for students are available in the Department of Chemistry and Biochemistry via one-on-one faculty-guided research in chemistry and biochemistry. Research participation expands and builds on the knowledge and skills students acquire in their coursework, allowing students to develop higher order technical proficiency that substantially improves their ability to compete for graduate or professional opportunities. The range of research projects available in the department is wide and covers the sub-disciplines of analytical chemistry, biochemistry, inorganic chemistry, organic chemistry, and physical chemistry. In fact, many of the projects are cross-disciplinary, overlapping with several of these sub-disciplines.

This brochure is intended to provide students with a snapshot of some of the research projects that are currently underway in the department. Readers are encouraged to contact individual faculty should they have questions about the research in this brochure. Any other questions regarding department research opportunities not answered in this brochure should be directed toward the Department Chair.

There are two general mechanisms by which students can become involved in departmental research:

DURING THE ACADEMIC YEAR

Students who are interested in participating in research during the semester (fall or spring) can do so by enrolling in a particular faculty member's section of CHEM 440. Students who do enroll in CHEM 440 are expected to devote three hours a week for each credit hour earned. Some faculty may specify a minimum of six hours a week (two credit hours) for participating in their CHEM 440 section. Each student will undergo laboratory safety training in the faculty member's lab prior to beginning any laboratory work.

To initiate this process, it is strongly recommended that students first pick up an *Application for Research* form from the departmental office (also online). This form instructs students to arrange for individual interviews with at least three research-active faculty with whom they are considering working. The discussion during those interviews will likely focus on ongoing projects within each faculty member's research group and whether there are available positions within their group. After completing the interviews, the student should rank their first, second, and third choice for faculty mentor, attach a copy of their weekly schedule for the semester, and return the form to the departmental office. Students must complete these interviews by the due date listed on the form. The faculty will then compile the application forms and try to match each student with one of their faculty mentor choices. Afterwards, students will be contacted by their assigned faculty mentors and given details about the section of CHEM 440 they should register into.

DURING THE SUMMER

Students who are interested in participating in research during the summer and have not participated previously in CHEM 440 are strongly recommended to pick up an *Application for Summer Research* form from the departmental office and to arrange for individual interviews with at least three research-active faculty, in a process that is formally identical to the one discussed above for CHEM 440. Students must complete these interviews by the due date listed on the form. If selected, students will be contacted by their assigned faculty mentors in order to discuss the details associated with their participation in the summer program. The number of summer research positions that become available may vary from year to year and will depend on the level of department and extramural funding that exists.

Students who have previously enrolled in CHEM 440 with a faculty member (and have already participated in individual interviews with faculty) and who wish to participate in summer research need only fill out an *Application for Summer Research* form and list the name of their faculty mentor. It will also be necessary for these students to discuss with their faculty mentor their intention to apply for the summer program well in advance of the indicated due date for the application.

Dr. Megan Connor Chemistry Education

Research in the Connor Group sits at the intersection of chemistry, educational and cognitive psychology, and the social sciences, where it focuses on creating postsecondary chemistry learning environments that support all students. To accomplish this overarching research goal, we draw on disciplinary expertise in chemistry as well as theoretical and methodological tools from education research to pursue two complementary lines of inquiry. These lines involve (1) exploring how instructional design can undermine student learning and sense of belonging, as well as how it can be reimagined to more effectively support all learners and (2) investigating factors that influence postsecondary chemistry instructors' use of evidence-based instructional practices (EBIPs). Through this work, we aim to produce usable knowledge for postsecondary institutions and chemistry educators while also contributing to theoretical understandings of student learning, sense of belonging, and instructional reform.

Project 1: Investigating the impact of historical content in general chemistry textbooks

Historical content is included throughout general chemistry textbooks. However, it is unclear how the inclusion of such content impacts students' visual attention and cognitive effort, both of which influence learning. Our group investigates this impact using a mixed-methods approach involving eye tracking and a content analysis of general chemistry textbooks. Eye tracking involves measuring where an individual looks and for how long, which together provide insight into visual attention and cognitive effort. Results from the content analysis are used to inform the design of tasks completed by study participants during eye-tracking sessions. Findings from this project will inform the design of general chemistry textbooks and other curricular materials that effectively support student learning.

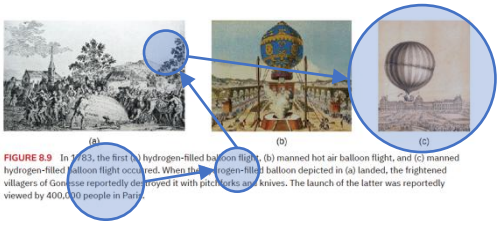


Figure 1. Example eye fixations and saccades on historical content in a general chemistry textbook.

Project 2: Developing a measure of stereotype threat vulnerability in postsecondary chemistry courses

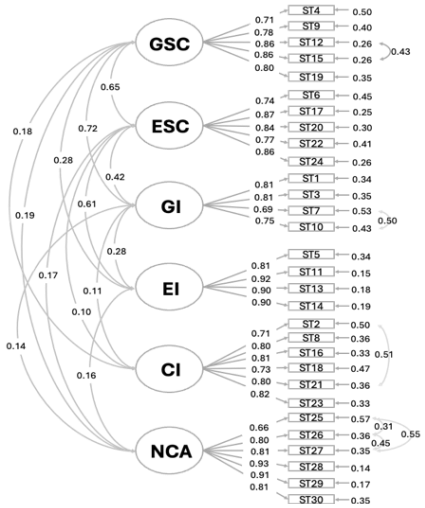


Figure 2. Results from confirmatory factor analysis of SIAS-Chem data.

Students' experiences of stereotype threat in postsecondary chemistry courses can undermine their academic performance and persistence. To advance chemistry education research and practice focused on reducing stereotype threat, a measure of students' susceptibility to this threat in postsecondary chemistry courses is thus needed, along with supporting evidence of validity and reliability. This project involves collecting a range of validity and reliability evidence for data obtained using the Social Identities and Attitudes Scale – Chemistry (SIAS-Chem), a novel measure of students' susceptibility to stereotype threat in postsecondary chemistry courses adapted from the Social Identities and Attitudes Scale (SIAS). Our group uses a mixed-method approach involving confirmatory factor analysis, measurement invariance testing, structured means modeling, cognitive interviews, and reliability coefficients to assess validity (*i.e.*, structural, consequential, relation to other variables, and response process) and reliability (*i.e.*, single-administration). Results from this project will provide preliminary support for interpreting and using SIAS-Chem scores across introductory-level chemistry courses (*i.e.*, general *vs.* organic chemistry) and institution types (*i.e.*, public *vs.* private). Instructors can then use the SIAS-Chem to create postsecondary chemistry learning environments that better support all students.

Recent Publications

1. Connor M. C., Parvin A. R., and Browning A. F., (2025), Exploring the association between communicating about NMR spectra and acute awareness of stigma attached to one's gender among women in postsecondary organic chemistry courses. *Chem. Educ. Res. Pract.* doi: 10.1039/d4rp00193a

2. Connor M. C. and Raker J. R., (2024), Factors associated with chemistry faculty members' cooperative adoption of evidence-based instructional practices: Results from a national survey. *Chem. Educ. Res. Pract.* doi: 10.1039/d3rp00194f

Dr. Brian W. Gregory — Analytical/Surface Chemistry

Research in the Gregory group generally focuses on topics that have applications in nanotechnology or surface science. Many of these projects are directed toward studying the structure and properties of novel surface films and layers that have advanced technological applications. These films involve the formation of ultrathin layers (< 10 nanometers (nm) thick) deposited onto metal or semiconductor surfaces through self-assembly processes or other atomic/molecular deposition methods. The structure and properties of these nanoscale materials are being investigated using *infrared reflection spectroscopy*, *electrochemistry*, *X-ray photoelectron spectroscopy*, *mass spectrometry*, or other surface-sensitive techniques. Undergraduate researchers in the Gregory group receive direct, hands-on experience with several of these techniques in their projects, and most have become co-authors on peer-reviewed scientific publications. Some of the recent projects in the Gregory research group are briefly described below.

PROJECT 1: CONSTRUCTION OF A BIOADHESION-RESISTANT OLIGO(ETHYLENEGLYCOL)-BASED SELF-ASSEMBLED MONOLAYERS FOR THE CHEMICAL ATTACHMENT OF ENZYMES TO SURFACES

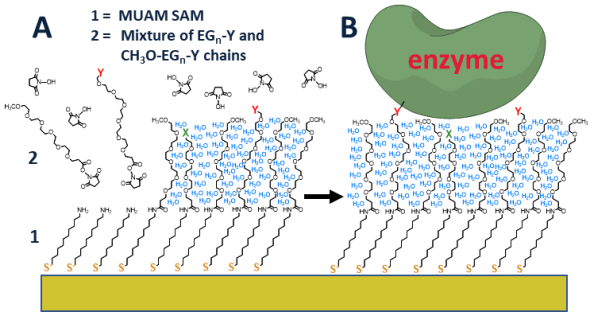


Figure 1. Multilayer mixed films for covalent immobilization of enzymes. Y = NHS ester. X = Internal standard.

One of our projects focuses on creating self-assembled monolayers (SAMs) on gold surfaces that can be used to covalently immobilize enzymes (**Fig. 1**). These SAMs are being constructed from α,ω-functional reagents and consist of (1) a compact inner layer composed of 11-mercapto-undecylamine (MUAM), and (2) a less compact outer layer composed of bifunctional oligo(ethylene-glycol) reagents (X-EG_n-Y, n > 1). Using N-hydroxysuccinimide chemistry, conjugation of EG_n-Y to the terminal primary amine of MUAM results in amide bond formation and provides the precursor MUAM-EG_n–Y species from which the SAM can be formed. To both bind the enzyme and minimize its non-specific adsorption, the SAM must be formed from at least two MUAM-EG_n-Y precursors having different terminal Y groups. The majority precursor contains a methoxy (Y = CH_3O-) group that minimizes uncontrolled bioadhesion, whereas the minority precursor contains a different Y group that extends outside the SAM and binds the enzyme. *Infrared reflection-absorption spectroscopy* (IRRAS) and *X-ray photoelectron spectroscopy* (XPS) are currently being used to characterize the structures of these films.

PROJECT 2: ULTRAVIOLET-OZONE-ASSISTED DEPOSITION OF NANOSCALE SILICA GLASS FILMS FOR MICROELECTRONICS PROCESSING APPLICATIONS

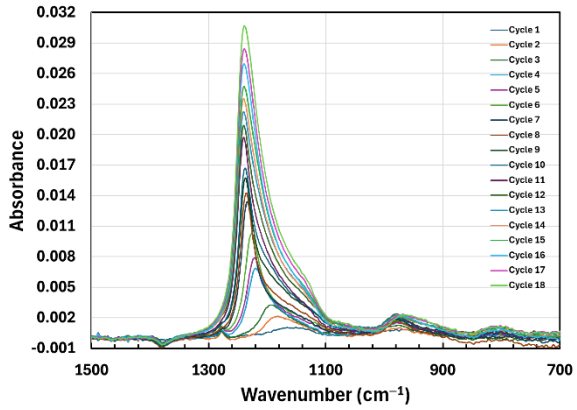


Figure 2. IRRAS spectra of silica glass films grown onto gold surfaces as a function of deposition cycle. The peak at 1235 cm^{-1} is called the *Berreman mode*. Its abnormally large intensity arises from coupling of IR light with phonon modes (lattice vibrations) within the glass layer – creating a quasiparticle called a *phonon-polariton* – which causes the electric field of the IR light to localize within the film.

Another recent project in the Gregory research group has focused on using ultraviolet-ozone (UVO3) treatment to deposit nanoscale silica glass films (< 2 nanometers thick) onto surfaces. Silica glass is an amorphous form of silicon dioxide (SiO_2) that is used extensively in the microelectronics industry, often as a gate dielectric in metal-oxide-semiconductor field effect transistors (MOSFETS). For many years, SiO_2 has been a preferred material for gate dielectrics due to its high electrical resistance and large capacitance. Furthermore, SiO_2 is able to maintain a well-defined interface with the Si wafers onto which it is grown, to withstand mechanical stress, and to minimize the diffusion of dopants which can degrade device performance during operation. Our group has recently been investigating the use of the UVO3 process as a method to deposit ultrathin silica-glass-based films onto various surfaces, and to do so with considerable control over film thickness (in the sub-nm to nm range). The methodology also appears to provide some ability to control the composition of the deposit, from sub-stoichiometric SiO_2 to fully stoichiometric silica. Current efforts are directed toward elucidating the structural nature of these deposits and their compositions, as well as extending the UVO3 method to other materials. *Infrared reflection-absorption spectroscopy* (IRRAS), *X-ray photoelectron spectroscopy* (XPS), and spectral simulations of the IRRAS data[1] are being used to characterize these films.

References: (1) M. Milosevic, N. Wendland, R.E. Lee, and B.W. Gregory, The Usefulness of Spectroscopic Simulations. *Appl. Spectrosc.* **2020**, *74(3)*, 305-313.

Dr. Corey M. Johnson — Biochemistry

Enzymology

Enzymes are fascinating biological catalysts which mediate most of the biochemical reactions found in nature. In addition, enzymes, along with cell surface receptors, are most often the target of designed drugs. Research projects in my lab use a broad spectrum of biochemical methods to understand how enzymes work and how that knowledge can be exploited for the development of new therapies or industrial applications.

Enzyme Function and Antibiotic Development

Rapid development of antibiotic resistance is an increasing problem for treatment of life-threatening bacterial infection. Therefore, there is a great need to identify new targets and develop innovative, new approaches to the design of antibiotic drugs. The diaminopimelate pathway (DAP) for the biosynthesis of L-lysine in gram-negative bacteria and mycobacteria has been identified as a target for antibacterial agents because it produces *two* metabolites necessary for bacterial growth, survival and pathogenicity; the amino acid L-lysine, and its precursor, *meso*-diaminopimelate (used in construction of the bacterial peptidoglycan (PG) cell wall). L-Tetrahydrodipicolinate *N*-succinyltransferase (DapD) is an enzyme that catalyzes the first committed step in the pathway. Structural, kinetic and chemical mechanistic studies of this enzyme will enable an informed drug design to inhibit this clinically relevant target (Hayes *et al*., 2025).

Enzyme Immobilization and Biosensors

In a collaborative project with Dr. Brian W. Gregory, we are studying the immobilization of enzymes to surfaces. This technology is useful for the development of biosensors and biofuel cells. Enzymatic systems offer a number of advantages in the development of industrial catalysts (mild conditions, cost, safety, sustainability). Unfortunately, immobilization of the enzyme often results in decreased catalytic efficiency. To investigate the enzyme-surface interface, we are studying the interactions between a model immobilized enzyme and a variety of surfaces. The model enzyme used in this project is laccase, a multi-copper oxidase of great interest as an industrial catalyst. Laccase catalyzes the oxidation of phenolic substrates with concomitant reduction of oxygen to water. We previously characterized laccase from fungal sources in bioremediation applications. This work resulted in two publications with Samford undergraduates (Beck *et al*., 2018; Eldridge *et al.,* 2017). Goals for this bionanotechnology project include achieving controlled, covalent attachment and surface coverage of the immobilized enzyme, as well as optimal enzymatic activity for the given application conditions.

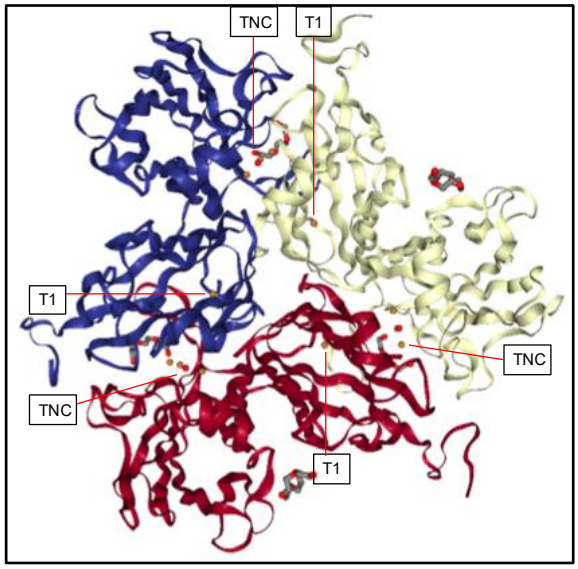


Figure. Small laccase from *Streptomyces coelicolor* is an enzyme important to industrial applications. The trimeric, functional form of the enzyme is shown here. The T1/TNC sites indicate locations of copper ion cofactors that participate in the oxidation/reduction reactions catalyzed by the enzyme. This image was generated using protein database PDB ID: 3CG8. (Skalova *et al*., 2009)

Recent Publications:

Hayes, B., Zuelzke, M., Smith, A.M., Edmonson, E., Osula, D.O., Clanton, N.A., Hollingsworth, H., Chooback, L., Lockart, M. and Johnson, C.M. (**2025**) A kinetic and spectroscopic study of tetrahydrodipicolinate *N*-succinyltransferase (DapD) from *Serratia marcescens* and its inactivation by Cu^{2+}. *Archives of Biochemistry and Biophysics.* 774: 110607.

Beck, S., Berry, E., Duke, S., Milliken, A., Patterson, H., Prewett, D., Rae, C., Sridhar, S., Wendland, N., Gregory, B.W. and Johnson, C.M. (**2018**) Characterization of *Trametes versicolor* laccase-catalyzed oxidation of estrogenic pollutants: substrate inhibition and product identification. *International Journal of Biodeterioration and Biodegradation.* 127: 146-159.

Dr. Molly M. Lockart — Biochemistry

Research in my lab combines techniques from molecular biology, chemistry, and physics to better understand enzymes that are important in human health and disease. Specifically, we focus on enzymes that are gatekeepers to the human immune response to pathogens, DNA damage, and tumors. Projects in my lab will include interdisciplinary skills such as cloning, enzymology, spectroscopy, data analysis, and programming in Python and MATLAB.

Exploring cGAS and its Role in the Human Immune Response

The recognition of foreign DNA is a cornerstone of host cell defense across various forms of life. In mammals, one of the key pathways is mediated by cyclic guanosine monophosphate-adenosine monophosphate synthase (cGAS for short). This enzyme (shown in **Figure 1**) binds double-stranded DNA in the cytosol of cells. While DNA is typically in the nucleus, cytosolic DNA can occur in the case of viral or bacterial pathogens, DNA damage, or tumor formation. Despite its importance in human health and disease, there are still many questions regarding cGAS structure and activity. Research in my lab will use a biophysical approach to look at the structure and function of cGAS. Specifically, our research will focus on addressing open questions related to cGAS activation and regulation.

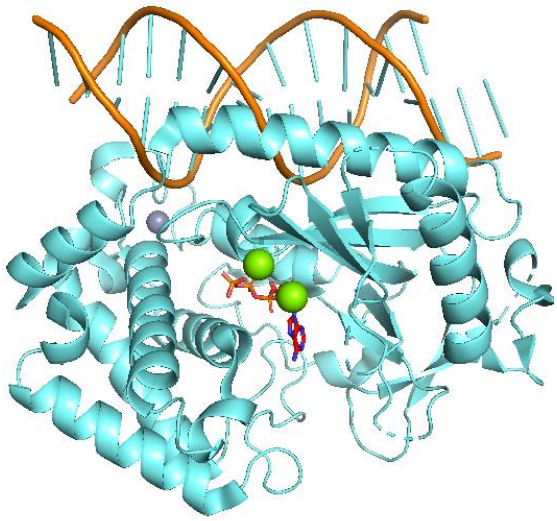


Figure 1: Crystal structure of human cGAS-DNA complex with ATP. PDB entry: 6CTA (Zhou, *et al*., 2018).

The initial project in my lab will be to explore a recently discovered alternative pathway of cGAS activation. Typically, cGAS uses Mg(II) as its catalytic cofactor. However, Mn(II) also binds to and activates cGAS. Interestingly, Mn(II) is released into the cytosol as an innate response to viral infections, and it increases cGAS' sensitivity to DNA. We will use enzymology and spectroscopy to look at how Mn affects cGAS structure and activity. A more in-depth understanding of how Mn(II) activates cGAS will provide new insight into cGAS-mediated antiviral responses.

In addition to looking at alternate activation pathways in cGAS, we will explore how cGAS is regulated towards self-DNA. The function of cGAS is to bind foreign DNA and to start an immune response. However, cGAS binds DNA regardless of the DNA sequence. Therefore, regulatory functions are in place to prevent it from binding self-DNA and causing an unwanted immune response. We will explore the structural components of cGAS that might be part of this self-regulation using a variety of spectroscopic techniques. In addition, we will generate variants of cGAS that are missing parts of the regulatory structure to better understand how activity towards self-DNA is prevented. Collectively, this project will provide new details about the components of cGAS that regulate its activity and how these regulatory domains are related to autoimmune responses.

Recent Publications

Lockart, M. M.; Edwards, K. C.; Vincent, J. B.; Pierce, B. S. Electron Paramagnetic Spectrum of Dimanganic Human Serum Transferrin. *Polyhedron*. **2021**, *203*, 115224.

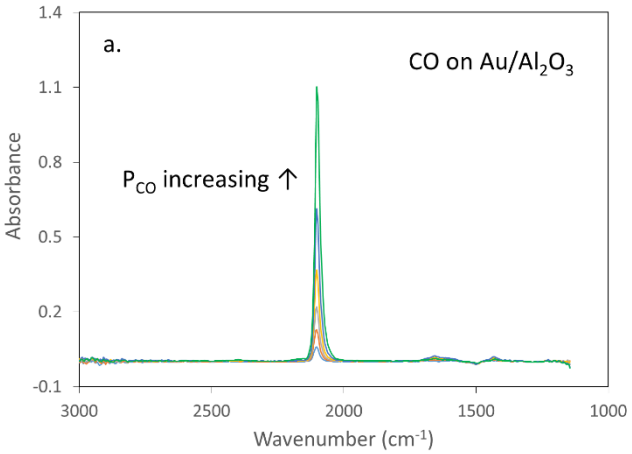
York, N. J.; **Lockart, M. M.**; Sardar, S.; Khadka, N.; Shi, W.; Stenkamp, R. E.; Zhang, J.; Kiser, P. D.; Pierce, B. S. Structure of 3-mercaptopropionic acid dioxygenase with a substrate analog reveals bidentate substrate binding at the iron center. *J. Biol. Chem*. **2021**, *296*, 100492.

Lockart, M. M.; Butler, J. T.; Mize, C. J.; Fair, M. N.; Cruce, A. A.; Conner, K. P.; Atkins, W. M.; Bowman, M. K., Multiple drug binding modes in Mycobacterium tuberculosis CYP51B1. *J. Inorg. Biochem.* **2020**, *205*, 110994.

Dr. Chris Pursell — Physical Chemistry

Infrared Spectroscopic Studies of Adsorption

Infrared spectroscopy is a fundamental experimental technique for probing the vibrational energy levels in molecules. Measurement of the infrared frequency that a molecule absorbs provides information about (1) the unique vibrational energy of the molecule (and helps identify the molecular species), and (2) the molecular environment; while measurement of absorbance provides information about the number of molecules present. Our research laboratory uses infrared spectroscopy to probe the adsorption of gas-phase molecules onto solid surfaces, thereby learning something about the interaction of the molecule with the surface and the physical and chemical properties of the surface. An example is shown below for the adsorption of CO gas on Au/Al_2O_3 catalyst. One project that we are presently pursuing is briefly discussed below.



Infrared spectra for the adsorption of CO gas onto Au/Al_2O_3 catalyst at room temperature. The different spectra represent different pressures of CO gas. The infrared frequency "peak" at 2100 cm^{-1} is unique for the CO molecule adsorbed on gold nanoparticles, while the absorbance measurement represents the number of CO molecules adsorbed.

Physical and Chemical Properties of Nanoparticle Metal Catalysts

Fundamental studies of the unique physical and chemical properties of metal nanoparticle catalysts are an important area of scientific research. An important aspect of these catalysts concerns the interaction of the metal nanoparticles with the underlying support. This is especially true for reducible metal oxide supports. The literature contains many examples that demonstrate how electronic metal – support interactions (EMSI) between metal nanoparticles and the support material are very important as they control electronic transfer and catalytic transformations that occur at the catalytic active site.

Understanding the mechanisms that control charge transfer and the activation of reactive species at specific sites can therefore aid in the design of more efficient and selective catalysts. This project therefore concerns fundamental EMSI studies examining adsorbate-induced charge transfer: from adsorbate to metal nanoparticle to the support.

Our research goals are: (1) to provide a deeper understanding of electronic metal – support interactions for these catalysts; and (2) to develop greater knowledge of the mechanism associated with hydrogen adsorption and dissociation, including hydrogen spillover. The ultimate outcome of these studies will be the further development of our understanding of metal nanoparticle catalysts.

Recent Publications:

CO Oxidation Kinetics over Au/TiO_2 and Au/Al_2O_3 Catalysts: Evidence for a Common Water-Assisted Mechanism, Johnny Saavedra, Christopher J. Pursell, Bert D. Chandler, *Journal of the American Chemical Society*, **2018**, 140, 3712-3723.

CO Adsorption on Au/TiO_2 Catalysts: Observations, Quantification, and Explanation of a Broad-Band Infrared Signal, Camilah D. Powell*, Arthur W. Daigh*, Meagan N. Pollock*, Bert D. Chandler, and Christopher J. Pursell, *Journal of Physical Chemistry – C*, **2017**, 121 (44), 24541-24547.

Dr. Christian Sanchez — Organic Synthesis

Combating Antimicrobial Synthesis through Synthetic Chemistry

Research in my lab focuses primarily on organic synthesis applied towards antibiotic development. Students will develop their organic synthesis and their microbiology skills, if they choose – beginning at any level.

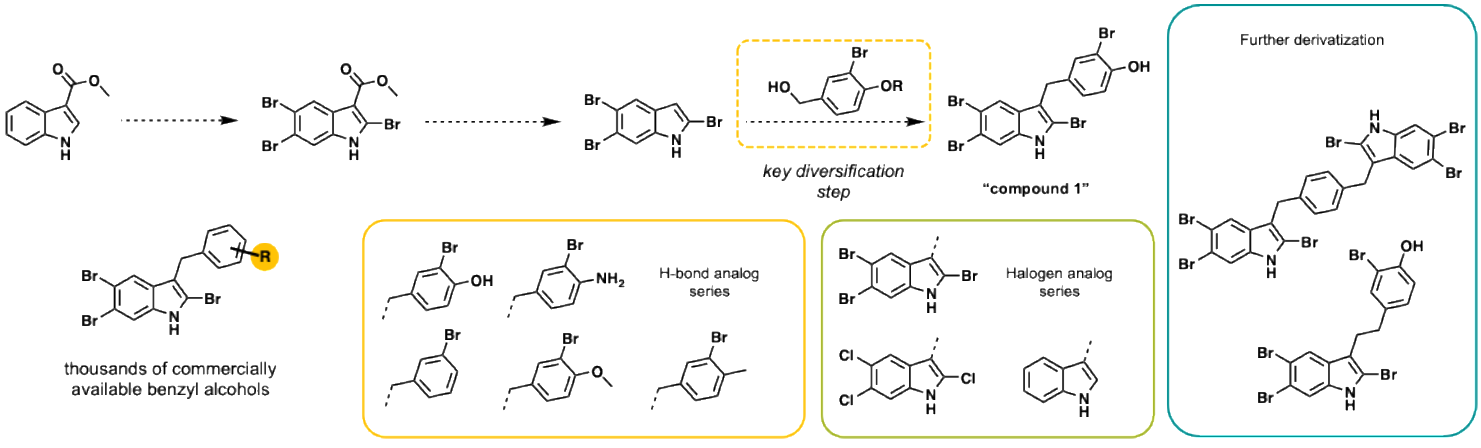
Within a century of the first commercialized antibiotics, the world is close to entering the "post-antibiotic era" as traditional antibiotics fall to antibiotic resistance. Due to the rise and spread of antimicrobial resistance, novel strategies to combat the ever-rising threat of pathogenic bacteria are required to prevent common infections and minor injuries from posing major threats to human health. In the United States alone, over 2.8 million antibiotic resistant infections occur annually, according to a 2019 report by the Center for Disease Control and Prevention. Since 2019, the situation has only worsened due to the increase in antimicrobial resistance brought on by the COVID-19 pandemic. With bacteria possessing resistance mechanisms to all major classes of antibiotics, the arms race between microbes and humans has become more dire. There exists a great need to develop antibiotics with novel mechanisms of action.

One of the most promising strategies to identifying novel antibiotic mechanisms of action is to turn to nature for inspiration. Natural products have traditionally been the armory by which scientists arm themselves with new therapeutics. Nature remains the greatest repository for novel therapeutics. Forty-eight percent of antibacterials approved as therapeutics from 1981 to 2019 were natural products or natural product derivatives.

Example Project:

Isolating from red algae *Laurencia similis* in 2017, Li et al. report the characterization of the first naturally occurring 3-benzyl-indole alkaloid, dubbed "**compound 1**." This tetrabrominated indole alkaloid displayed single-digit micromolar activity against both gram-positive and -negative bacterial species. This brominated indole with a novel scaffold is promising in that it could expand the current known molecular targets for antibacterial small molecules. While this scaffold is 3-benzyl-indole is novel, this brominated indole natural product is contained within a larger class of bioactive brominated indoles.

Other examples include the marine natural products dragmacidin A, dibromodeoxytopsentin, herdmanine D, and meridianin D. In addition, previous reports show that halogenated indole derivatives can have profound antimicrobial activity relating to biofilm inhibition, persister cell killing, and quorum sensing inhibition when compared to their non-halogenated analogs. Based on the corpus of literature surrounding this class of natural products, **I hypothesize that halogenation modulates the biological activity of marine bromoindole alkaloid "compound 1."**



Dr. Dale Wilger — Organometallic Chemistry & Catalysis

Developing New Ni-Catalyzed C–C Bond-Forming Reactions

Research in my group focuses on the catalytic chemistry of the first-row transition metals. The first-row transition metals provide the perfect balance of properties, allowing for new reaction modalities with practicality and ease of operation. While modern organic chemistry has developed into an incredibly advanced field, numerous challenges still exist. A brief survey of the chemical compounds produced on the industrial scale by human technology indicates an overarching level of structural simplicity when compared to the architectural scaffolds and active metabolites synthesized by biological organisms. The human population is growing, and our consumption of natural resources is increasing at an exponential rate. Organic chemistry is still one of mankind's primary instruments for converting natural resources into medicines, fuels, food additives, agrochemicals, and advanced materials such as plastics. Nearly all commercial commodities are now produced using some for of chemical catalysis. Future developments in this area will ensure our survival and promote the prosperity of the human race.

My undergraduate research group has developed several previously unknown Ni-catalyzed reactions, including an anti-selective alkyne hydroarylation (**Figure 1A**) and an indenone synthesis with simple methyl benzoate esters (**Figure 1B**). Alkyne hydroarylation provides one of the more convenient routes for the synthesis of alkenes with defined geometry. These alkenes are for a variety of purposes, including as chemotherapies, for polymerization feedstocks, and within liquid crystalline displays. Prior to our report, more than 50 different catalyzed alkyne hydroarylation reactions had been reported with controlled syn stereoselectivity. Our method allows access to gram quantities of alkene products with the opposite anti stereoselectivity. In 2022, my group reported a Ni-catalyzed indenone synthesis that enabled the use of alkyl- and silyl-substituted alkynes. Indenones have been highly sought after chemical compounds because they frequently exhibit biological activity, including antimicrobial, antitumor, anti-inflammatory, and cognitive health applications. We further demonstrated that the regioselectivity of these reactions is dependent upon both the steric parameters of the alkyne and the electronic character of the aryl ester, a previously uncharacterized phenomenon with broad reaching implications. Our group recently published compelling evidence indicating why this unusual synergistic behavior is observed. Future studies will further elaborate this phenomena and use it toward productive catalysis.

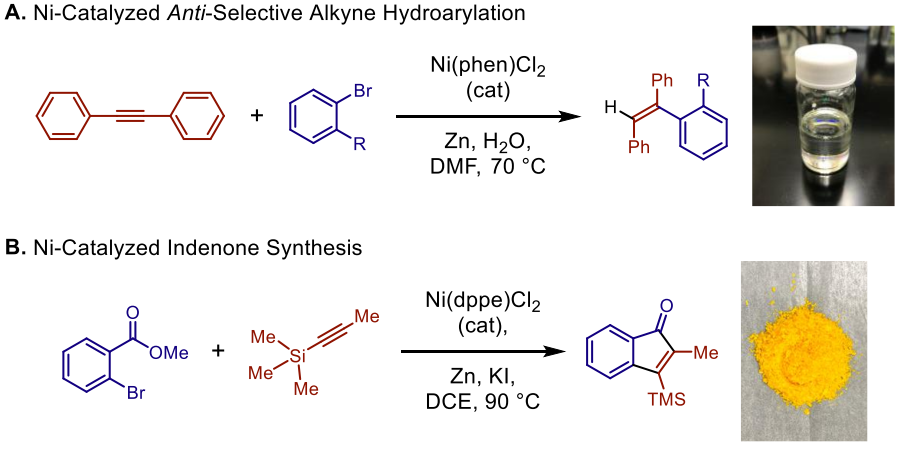


Figure 1. Research developments from my group. **A.** Ni-catalyzed anti-stereoselective alkyne hydroarylation. **B.** Ni-catalyzed indenone synthesis with silyl (silicon) substituents.

Recent Publications:

Moore, L. P.; Hagedorn, Z. J.; Barnes, M. E.; Dye, M. L. N.; Whitt, L. M.; Wilger, D. J. *Organometallics* **2023**, *42*, 357.

Wilger, D. J.; Moore, L. P.; Lockart, M. M. *Advances in Organometallic Chemistry* **2024**, *82*, Chap 1, 1.

Head, K. K.; Holley, J. L.; Roberts, H. E.; Kinsey, M. K.; Plummer, S. E.; Raymond, M. V.; Richards, A. J.; van Tol, M. A.; Wall, M. G.; Wilger D. J. *Organometallics* **2025**, *44*, 922.