



video teaching & research statement & sample lecture
<https://www.youtube.com/user/JulietHahnPhD>)

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Excellent Teacher; Research Interests - Organic, Bioorganic, Organometallic, Materials

teaching: track record of increasing enrollment and attracting students to Chemistry, excellent teaching evaluations from students, colleagues and deans (see teaching evaluations) **Organic** Lecture, **General Chemistry** Lecture, Organic Lab (using lab manual solely authored by me), Graduate Level Lectures taught: Advanced Organic, Bioorganic, Organic Spectroscopy, Organometallics **supervised:** 4 to 5 undergraduate researchers / semester and some graduate student researchers, ~ 2 undergraduate teaching assistants (TA) / semester **graduate level coursework:** PHD **Organic**, with additional **21 credit hours** in **Inorganic**, **12 credit hours** in **Analytical** (Most PHD programs require 9 to 12 credit hours for a major in a Chemistry sub area, Therefore I have enough graduate credit to claim to have a triple major in the Chemistry sub areas of Organic, Inorganic and Analytical Chemistry. General Chemistry is usually taught by Chemistry PHDs with a sub area major of Inorganic or Analytical.)

***** **increased classroom enrollment** in similar or parallel credit classes by as much as **10 times the normal enrollment** as professor and visiting professor at a number of schools *****

principal investigator research: spectroscopic characterization & synthesis of heterocyclic amine & carbon nanotubes of Material Science, Organometallic, Pharmaceutical, Bioorganic interests (a) carbon nanotubes - solar power, new materials (b) bioorganic DNA derivative photodimerization - skin cancer (c) cocaine derivative - Alzheimer's disease, organometallic catalysis, synthetic organic methodology (d) educational research - teaching large lecture & training research students with limited background & no interest in the sciences to do research quickly (** **in research section** is PI research to be continued into new faculty position, carried out with undergraduate students at primarily undergraduate institution)

Educational Research: Teaching Science to Undergraduate Students with Limited Science & Math Background Training students with limited science background to conduct chemistry experimental research with short training time. I have some innovative ideas for making science exciting, accessible and interesting to the most disinterested students to train the next generation of students for scientific, medical,

engineering careers. These innovative teaching ideas are from the experience of working with the classroom and research lab students in my very geographically and socioeconomically diverse former faculty positions. (I have never taught at the high school level. All faculty positions have been post Ph.D.)

I can make the most boring science interesting, exciting, understandable and relatable to the most disinterested students with the most limited scientific background. I have experience teaching a wide variety of students. [economically disadvantaged, 90% white, 85% black, 30% hispanic, honor's, military related, first generation]. According to my experience, any student can learn anything when the material is presented in a way that fits the students. I also emphasize understanding and reasoning rather than rote memorization in coursework.

The teacher's job is to function as the human bridge between the material and the students. What makes a teacher really click for a particular group of students is that the **teacher fits herself to her students** by communicating interactively to **fit the material to the students** by adjusting pace, content & even jokes.

Professional Experience (in reverse chronological order)

currently: Assistant Professor August 2012-now Francis Marion University (~4000 student enrollment, BS degree in Chemistry) **teaching:** General Chemistry Lecture 2 x 60 student sections; General Chemistry Lab 2 x 30 student sections

Assistant Professor Tenure Track Faculty Positions:

Delaware State University, Dover, DE
Arkansas State University, Jonesboro, AR

Postdoctoral Research Position:

University of Wisconsin, Madison
Columbia University NY, NY

Education:

Ph.D. Organic Chemistry	State University of New York, Stony Brook, NY
BS Chemistry	University of South Carolina, Columbia, S.C. Magna Cum Laude, Phi Beta Kappa (3.8 /4.0 GPA)
High School Graduate	Irmo High School, Columbia, SC commended student PSAT top 4% nationwide (97/100 cumulative GPA)

Teaching Experience:

Francis Marion University: General Chemistry Lecture (science majors freshman, ~60 student sections x 2 sections), General Chemistry Lab (~30 student sections x 3 sections) (15 contact hrs / semester)

Delaware State University: Organic Lecture (~50 students), Advanced Organic (graduate level, 5-15 students), Organic lab (20-50 students), General Chemistry Lecture (15-30 students), non science major General Chemistry Lecture (~50 students), supervised 1-2 undergrad teaching assistants/semester, research advisor to ~14 undergrads (in 3yrs at DSU), increased students in upper level chemistry classes from ~5 students/class to ~15 to 30 students/class (9 contact hrs / semester)

Arkansas State University: Organic Lecture (20-60 students), Organic Lab (20-100 students) using copyrighted lab textbook (sole author), supervised 1 to 2 undergraduate teaching assistants/semester, research advisor to ~5 undergrads/semester (15 contact hrs / semester)

as Visiting Assistant Professor (U. of Toledo & U. of Missouri) ~300 student Organic Lecture in 2 classes (entire sophomore class), ~300 student lab class – one hr. / week lab lecture & supervised 11 graduate student teaching assistants (in two semesters)

other classes taught: graduate level Advanced Organic, graduate level Bio-Organic, graduate level Organometallic, graduate level Organic Spectroscopy

ancillary

completed 6, 2 hour workshop series on “Communication Science to the Public: Improvisation for Scientists” An innovative program designed by Alan Alda using improvisational theater techniques (Stony Brook Center for Communicating Science within the School of Journalism) to learn to communicate science to the public. (Fall 2010)

Completed 6 week (10 hr / week) Workshop for Faculty at Francis Marion University on Online Teaching - Summer 2013

Research Experience

****Delaware State University, Arkansas State University (principal investigator)** photochemistry of a derivative of thymine, of interest for understanding skin cancer and DNA based drug design & stereoselective synthesis of heterocyclic amines of pharmacological interest (using organoaluminum & heterocyclic amine synthesis) ****Delaware State University (principal investigator)** in characterization & functionalization of carbon nanotubes with DNA bases, porphyrin, & surfactants of interest as solar energy collectors, pharmaceuticals & electronic materials (****This Principal Investigator research will continue into new faculty position.**)

University of South Carolina: synthesis and characterization of gold organometallics of catalytic interest

University of Oklahoma: hired to write research proposals, supervise and train research students, substitute teach and write papers

changed research project from an exploration of functionalization of carbon nanotube as an extension of alkene functionalization to NMR spectroscopic characterization of functionalized carbon nanotube; developed carbon nanotube research project by collaboration with a chemical engineering research group and calling experts in carbon nanotube research and asking questions

characterization and functionalization of carbon nanotube with aniline derivatives by a diazonium intermediate

University of Wisconsin, Madison: silafluorene application in photon based data storage & organosilicon analog of carbenes using organic/organosilicon synthesis & characterization, synthetic organic chemistry; heterocyclic amine & pyrone synthesis of natural products of pharmaceutical interest using a formal [3+3] cyclization, enamides & nonnatural amino acid chiral auxiliary (RPH moved to Wisconsin)

Columbia University, NY: Zn & Ni pyrazoylborate complexes, Ti & Mo cyclopentadienyl ansa metallocenes & Sn & Pb salen complexes of interest as metalloenzyme models, & Ziegler Natta type polymerization catalysts

Stony Brook University: stereoselectivity of heterocyclic amines & their positively charged nitrogen derivatives (Ph.D. thesis work); molecular mechanics software design for transition metal carbonyl

Research Proposals Funded:

- (a) **NIH INBRE** proposal funded as Principal Investigator \$15,000 (2009, DSU)
- (b) **research subcontract** with John Hopkins Applied Physics lab funded as Principal Investigator for \$40,000 (2008, DSU)
- (c) **NASA/EPSCOR** proposal funded as Principal Investigator \$5,090 (2004-2005, ASU)
- (d) **NSF-MRI** for an FTNMR proposal funded \$200,000 (2000-2002, SUNY-Cortland, one of 3 research project directors, only one with any FTNMR experience)
- (e) ~20 **internal proposals** funded as Principal Investigator at DSU, ASU, Cortland, NYS/UUP & St. John's funded \$37,000

submitted/not funded: ~30 proposals to: NSF/CAREER, NIH/SCORE, DoD, ACS/PRF, Research Corporation; NIH/AREA (as sole PI), DoD (as PI, with co-PI) & NSF/DUE ILI (as co-PI)

recently submitting approximately 6 proposals to external agencies / year

Some Representative Recent Research Proposals Submitted:

NSF CAREER Functionalization of DNA / RNA Bases: A Bio-Organic Approach Part A: Photodimerization of a Derivative of Thymine to Simulate Cancer Hot Spots in DNA Part B: Functionalization of Carbon Nanotubes by DNA/RNA Bases by Adsorption and by Covalent Functionalization Part C: Educational Plan: Outreach to Dover Air Force Base Personnel and High Schools in the Greater Dover Area

DoD Part A: Functionalization of Carbon Nanotubes by DNA Bases to Develop Conductive Materials and Biosensors Part B Education Plan: Outreach to Military Personnel using the SOAR Method

NASA/EPSCoR RID Seed Grant: Functionalization of Carbon Nanotubes by DNA/RNA Bases to Develop New Materials for NASA Applications: Gossamer Spacecrafts

Synthetic and Analytical Experience:

1. **NMR experimentalist for carbon nanotube, organic and organometallic analysis:**
 - a. **2D NMR** – proton proton & proton carbon correlated NMR of carbon nanotubes, organic and organometallic molecules (COSY, HETCOR, NOESY, HMQC, HMBC, GNOE)
 - b. **multinuclear high resolution nuclear magnetic resonance spectroscopy** (^1H , ^{13}C , ^{27}Al , ^{29}Si) VT NMR, NMR kinetic measurements, DEPT, INEPT, T_1 studies, solid state NMR
2. **synthetic organic, carbon nanotube and organometallic compound experimentalist**
 - a. **synthetic organic chemistry** - carbon nanotube functionalization, bio-organic DNA derivatives, heterocyclic (N & O), enamides, Evan's chiral auxiliary, cysteine derivatives, combinatorial synthesis
 - b. **synthetic organometallic chemistry** - Al, Hg, Fe, Si organometallics & Ni & Zn pyrazoylborates, silylenes, silafluorenes, (air sensitive compounds) using vacuum, schlenk, dry box techniques
3. **other analytical experience:** TLC, flash column chromatography (LC) - separation of diastereomers, IR, UV-Vis, GC, raman, LCMS, HPLC, single crystal X-ray diffraction structure of small organometallic compounds (solved 3 structures, collected data on 2 other structures), electrochemistry
4. **molecular mechanics software design & computer experience:** wrote modifications to MM2 (organometallic applications), Spartan, 2 courses short of computer science BS double major (chemistry BS) as an undergraduate at the University of South Carolina, Columbia

Selected Publications: (a) **9 publications** in refereed journals (b) 1 copyrighted **lab manual**
(c) **3 publications in preparation as principal investigator** (d) ~ 30 **presentation** at national and regional
ACS meetings ~20 of the presentations as principal investigator

(* is Principal Investigator, # is undergraduate coauthor)

- Juliet Hahn* "Stereoselectivity Control in Tropinone and N-Phenyltropinone by Electronic Effects" in preparation
- Juliet Hahn* "The Effect of Surfactant Content on the Electrical Conductivity of Carbon Nanotubes" in preparation
- Juliet Hahn* "Stereoselectivity and Optimization of Orotic Acid Photodimerization by Solvent and pH Effects" in preparation
- Juliet Hahn*, "Organic Chemistry I Lab, lab textbook", 2004, Arkansas State U.
- Nadia Sydorenko, Richard Hsung*, Ossama Darwish, Juliet Hahn, Jia Liu, *J. Org. Chem.* 2004, 69,6732-6738. "Tetronamides as Latent Acyclic Vinylogous Amides in Formal Aza-[3 + 3] Cycloaddition Reactions with-Unsaturated Iminium Salts. An Approach to Synthesis of Highly Substituted Piperidines."
- Hong Shen...Richard Hsung*...Juliet Hahn et al., *J. Org. Chem.* 2003, 68, 1729, "A Formal [3+3] Cycloaddition Reaction. An Improved Reactivity Using Unsturated Iminium Salts and Evidence for Reversibility of 6-Electron Electrocyclic Ring Closure of 1-Oxatrienes"
- Michael McLaughlin, Richard Hsung*, Kevin Cole, Juliet Hahn, Jiashi Wang, *Organic Letters*, 2002, 4, 2017, "A Novel and Highly Stereselective Approach to Aza-Spirocycles. A Short Total Synthesis of 2-Epi-(+/-)-Perhydrohistrionicotoxin and An Unprecedented Decarboxylation of 2-Pyrones."
- Hui.Xiong, Richard Hsung*,Li Shen, Juliet Hahn, *Tet. Lett.* 2002, 4449, "Chiral Enamide Study I. Epoxidation of Chiral Enamides. A Viable Approach to Chiral Nitrogen Stabilized Oxyallyl Cations in [4+3] Cycloadditions."
- Matthew Kuchta, Juliet Hahn, Gerard Parkin* *J. Chem. Soc. Dalton Trans.* 1999, 3559. "Divalent Tin and Lead Complexes of a Bulky Salen Ligand: The Syntheses and Structures of [Salen^{But.,Me}] Sn and [Salen^{But.,Me}] Pb"
- Hysun Lee, John Bonanno, Tony Hascall, Jason Cordaro, Juliet Hahn, Gerard Parkin* *J. Chem. Soc. Dalton Trans.*, 1999, 1365. "[Me₂Si] Ansa Bridged Complexes of Permethyltitanocene: Synthesis and Structural Characterization of Fulvene Derivatives with Trialkylidenemethane Character"
- David Churchill, Jun Ho Shin, Tony Hascall, Juliet Hahn, Brian Bridgewater, Gerard Parkin* *Organometallics*, 1999, 18, 2403. "The Ansa Effect in Permethylmolybdenocene Chemistry: A [Me₂Si] Ansa Bridge Promotes Intermolecular C-H and C-C Bond Activation."

Selected Presentations (* is Principal Investigator, # is undergraduate coauthor)

- Juliet Hahn* “Organoaluminum and zwitterionic effect on stereoselectivity in tropanes”, 243rd National ACS Meeting San Diego, March 27, 2012
- Juliet Hahn* “Electrical conductivity of surfactant modified carbon nanotube thin film”, 243rd National ACS Meeting San Diego, March 25, 2012
- Juliet Hahn* “Academic Employment Initiative (AEI): Carbon nanotubes for solar energy, thymine photodimerization as a bioorganic model for skin cancer, cocaine analog synthetic methodology for pharmaceutical synthesis and how to teach anything to anyone while increasing enrollment and learning in general and organic chemistry classes”, 242nd National ACS Meeting Denver, August 29, 2011
- Juliet Hahn* “Surfactant effect on electrical conductivity of carbon nanotube thin films”, 242nd National ACS Meeting Denver, August 30, 2011
- Juliet Hahn* “Solvent effect on the photodimerization of thymine”, 242nd National ACS Meeting Denver, August 30, 2011
- Juliet Hahn* N-phenyltropanone and tropinone: Understanding the mechanism of stereoselection, 241st National ACS Meeting Anaheim, March 30, 2011
- Juliet Hahn* “Solvent Effects on the Rate of Photodimerization of Orotic Acid”, 240th National ACS Meeting, Boston, August 20, 2010
- Juliet Hahn* “Effect of Surfactant and Surfactant Content on Electrical Conductivity of Single Walled Carbon Nanotube Thin Films”, 240th National ACS Meeting, Boston, August 20, 2010
- Juliet Hahn* “Academic Employment Initiative (AEI): Carbon Nanotube Based Solar Energy Collectors, a Bioorganic DNA Derivative of Skin Cancer Model, and Synthetic Methodology for Pharmaceuticals for Alzheimer’s Disease”, 240th National ACS Meeting, Boston, August 20, 2010
- Juliet Hahn* “Skin Cancer Reaction in a Test Tube: Solvent Effect on the Photodimerization of a Derivative of Thymine”, Middle Atlantic Regional Meeting of the ACS, Wilmington, DE, April 10, 2010
- Juliet Hahn* “Surfactant Modified Carbon Nanotubes: Effect of Surfactant and Surfactant Content on Electrical Conductivity”, Middle Atlantic Regional Meeting of the ACS, Wilmington, DE, April 10, 2010
- Juliet Hahn* “Surfactant Modified Carbon Nanotubes: Effect of Surfactant and Surfactant Content on Electrical Conductivity”, 239th National ACS Meeting, San Francisco, CA, March 21, 2010
- Juliet Hahn* “Skin Cancer Reaction in a Test Tube: Solvent Effect on the Photodimerization of a derivative of Thymine”, 239th National ACS Meeting San Francisco, CA March 21, 2010
- Juliet Hahn* “AEI: Carbon Nanotubes, Bioorganic DNA Derivatives, and Heterocyclic Amines of Pharmaceutical Interest: Using Organic Chemistry Research with Undergraduates to Recruit

Nontraditionally Scientifically Inclined Students into Chemistry and the Sciences”, 238th National ACS Meeting Washington DC, August 16, 2009

- Juliet Hahn*, Jose Portela-Berrios[#], Alex Bishoff[#] “Photodimerization of Orotic Acid in Acetonitrile: the Skin Cancer Reaction in a Test Tube”, Honor’s Day Presentation, DSU, April 2, 2009
- Juliet Hahn*, Stephanie Blackman[#] “[2+2] Photodimerization of Orotic Acid in Methanol: the Skin Cancer Reaction in a Test Tube”, Honor’s Day Presentation, DSU, April 2, 2009
- Juliet Hahn*, Napreet Tung[#] “Kinetic Study of the Photodimerization of Orotic Acid in Acetone: the Skin Cancer Reaction in a Test Tube”, Honor’s Day Presentation, DSU, April 2, 2009
- Juliet Hahn*, Ruth Wamwati[#], Nicole Morris[#] “Stereoselectivity in Nucleophilic Addition to Tropinone”, 236th National ACS Meeting, Philadelphia, August 20, 2008
- Juliet Hahn*, Samantha Koonce[#] “The Effect of Sodium Cholate on the Electrical Conductivity of Carbon Nanotubes”, DSU Undergraduate Summer Research Symposium, July 31, 2008
- Juliet Hahn*, Samantha Noviscky[#], Logan Mears[#] “The Effect of Sodium Deoxycholate on the Electrical Conductivity of Carbon Nanotubes”, DSU Undergraduate Summer Research Symposium, July 31, 2008
- Juliet Hahn*, Tayyaba Toseef[#] “The Effect of Sodium Taurodeoxycholate on the Electrical Conductivity of Carbon Nanotubes”, DSU Undergraduate Summer Research Symposium, July 31, 2008
- Juliet Hahn*, Nicole Williams[#] “The Effect of Sodium Dodecyl Sulfate on the Electrical Conductivity of Carbon Nanotubes”, DSU Undergraduate Summer Research Symposium, July 31, 2008
- Juliet Hahn*, Ruth Wamwati[#], Nicole Morris[#] “The Zwitterionic Effect on the Stereoselectivity of the Reduction of the N-Methyl Derivative of Tropinone”, 235th National ACS Meeting New Orleans, April 2008
- Juliet Hahn*, Nicole Morris[#], Ruth Wamwati[#] “The Zwitterionic Effect on the Stereoselectivity of the Reduction of the N-oxide Derivative of Tropinone” HBCU-UP Summer Research Symposium August 2007
- Juliet Hahn*, Ruth Wamwati[#], Nicole Morris[#] “The Zwitterionic Effect on the Stereoselectivity of the Reduction of the N-methyl Derivative of Tropinone” HBCU-UP Summer Research Symposium August 2007
- Juliet Hahn*, Ruibo Li, Christopher Brammer[#], Donna Nelson* "Characterization of Functionalized SWNT." National ACS Meeting, March 2006, Atlanta
- Juliet Hahn*, Rachael Butcher[#], Heather McPherson[#], Valerie Campbell[#], Donna Fires[#] "Synthesis of Derivatives of Orotic Acid" 230th ACS national Meeting, Washington DC, August 2005

- Juliet Hahn*, Brandi Greene[#], Karen Brawner[#], Madhvi Patel[#] "Stereoselectivity in the [2+2] Photodimerization of Orotic Acid", 229th ACS National Meeting, San Diego March 2005
- Juliet Hahn,* "Stereoselective Synthesis of Tropanes", 228th ACS National Meeting, Philadelphia August, 2004
- Nadia Sydorenko, Richard Hsung*, Ossama Darwish, Juliet Hahn "Chiral enals and tetronamides in formal aza-[3+3] cycloaddition reactions: Synthesis of piperidinyl heterocycles and related natural products.", 228th ACS National Meeting, Philadelphia August, 2004
- Nadia Sydorenko, Richard Hsung*, Juliet Hahn, Ossama Darwish "Formal [3+3] cycloaddition strategy towards synthesis of highly functionalized piperidines", 226th ACS National Meeting, New York, NY, September 7, 2003.

Synergistic Activities:

Nominated Teacher of the Year (SJU)

ad hoc Reviewer Cooperative Research Grants (US CRDF)

ad hoc Reviewer NSF

Session co-Chair, Inorganic Chemistry Division, Nanoscience, 240th National ACS Meeting, Boston, Fall 2010

Session Chair Organic Chemistry Division, Stereoselectivity, 228th National ACS Meeting, Philadelphia, Fall 2004

Honors: Dean's List (7 semesters, undergraduate University of South Carolina), President's List (3 semesters, undergraduate University of South Carolina), Magna Cum Laude (BS at University of South Carolina), Phi Beta Kappa (undergraduate honor society at University of South Carolina), Phi Beta Kappa Freshman Scholarship Award (undergraduate at University of South Carolina), Phi Lambda Upsilon (State University of New York, Stony Brook; graduate honor society), commended student (at **Irmo High School; Columbia, SC**; top 4% nationally on PSAT, top 5 in class of ~ 500)

Service: Faculty Senate Alternate (DSU), Curriculum Committee (DSU), Faculty Search Committee (ASU), advisor to 40 BS/BA Chemistry majors (ASU),

U.S. Citizen, Asian American, came to US as 8 year old child with parents, grew up in NY & SC

undergraduate students directed in research (as principal investigator) Stephanie Blackman, Jose Portela-Berrios, Alexander Bishoff, Candice Holland, Napreet Tung, Timothy Hokett, Christen Dillard, Samantha Koonce, Logan Mears, Samantha Novitsky, Tayyaba Toseef, Nicole Williams, Ruth Wamwati, Nicole Morris, Rachael Butcher, Donna Fires, Valerie Campbell, Heather McPherson, Madhvi Patel, Brandi Greene, Karen Brawner, Rebecca Forrest, Tressa Gordon, Neeraj Addagada, Jay Chen