Juliet Hahn, Ph.D.
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Organic Chemist with Bio-organic & Materials Research Interests

* **research: - spectroscopic characterization and synthesis of carbon nanotubes, and heterocyclic amines of material science, pharmaceutical and bioorganic interest** carbon nanotubes / solar power, semiconductor & new materials; bio-organic DNA derivative photodimerization / skin cancer; cocaine derivative / Alzheimer's; organometallic catalysis / synthetic organic methodology

* **teaching**: **track record of increasing enrollment & attracting students to Chemistry**, Organic Lecture, General Chemistry Lecture, Organic Lab (using own lab manual), Advanced Organic, Bioorganic, Organic Spectroscopy Grad. Level Lectures, mentored 4 to 5 undergrad. researchers / year, supervised graduate student researchers, supervised ~ 2 undergrad. teaching assistant (TA) / year, ~ 11 graduate student TAs

Professional Experience (in reverse chronological order):

current:
visiting assistant professor (research position) University of Delaware, Newark, DE

teaching positions:

assistant professor:	Delaware State University, Dover, DE
assistant professor	Arkansas State U., Jonesboro, AR
assistant professor	SUNY, Cortland, NY
assistant professor	St. John's U., Jamaica, NY
visiting assistant professor	U. of Toledo, Ohio/ U. of Missouri, Columbia

research positions:

visiting assistant professor	University of Oklahoma, Norman, OK
visiting assistant professor	U. of Wisconsin, Madison/U. of Minnesota, Minneapolis
visiting assistant professor	Columbia University, New York, NY
postdoctoral research associate	U. of Illinois, Urbana-Champaign

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

Teaching Experience:

Delaware State U.: Organic Lecture (50 students class size), Advanced Organic (MS level, 5-15 students), Organic Lab (20-50 students), General Chemistry Lecture (15-30 students), non science major Chemistry Lecture (50 students), supervised 1-2 undergrad teaching assistants (TAs) per semester, research advisor to on average 5 undergrads per semester, increased students in upper level chemistry classes from 5 students per class to as many as 30 students per class (9 contact hrs/sem)

Arkansas State U.: Organic Lecture (20-60 students), Organic Lab (20-100 students) using own lab textbook, supervised 1 to 2 undergrad TAs per semester, research advisor to on average 5 undergrads per semester (15 contact hrs/sem)

SUNY, Cortland: Organic Lecture (30-40 students) & lab (20-40 students), General Chemistry Lab (20 students), increased enrollment in 2nd semester Organic Lecture from 5 to 30 students, increased chemistry minors, research advisor to 2 undergrads, (12 contact hrs/sem)

St. John's U.: Organic Lecture (100 students) & Lab (50 students), Bioorganic (new MS level class, 15 students), Organic Spectroscopy (MS level, 15 students), research advisor to 2 undergrads & 1 part time MS student (9 contact hrs/sem)

U. of Toledo: Organic Lecture (1st quarter - 120 students, 2nd quarter - 160 students, 3rd quarter - 270 students), Organic Lab (1st quarter - 20 students, 2 grad student TAs), coordinated Nursing Lab (2nd quarter - 130 students, 3 grad student TAs)

U. of Missouri: Organic Lecture & Lab for nonmajors (supervised 2 grad student TAs, ~100 students), lecturer & supervised 2 Organic Labs (OCI & OCII, one hour lecture/class per week) using own lab handout (supervised 9 grad student TAs including 2 stockroom grad student TAs, about 260 lab students)

as Teaching Assistant: General Chemistry Recitation & Lab, Organic Lab, Physical/Analytical/Inorganic Integrated Instrumental Lab

Research Experience:

Univerisity of Delaware: synthetic organic chemistry and synthetic methodology of natural products of potential applications as pharmaceuticals

DSU; ASU; SUNY, Cortland; St. John's U.; U. of Toledo & U. of Missori: PI (principal investigator) photochemistry of a derivative of thymine, of interest for understanding skin cancer and DNA based drug design & the stereoselective synthesis of heterocyclic amines of pharmacological interest (using organoaluminum & heterocyclic amine synthesis), **DSU**: PI in functionalization and characterization of carbon nanotubes with DNA bases, porphyrin, & surfactants of interest as solar energy collectors, pharmaceuticals & electronic materials

U. of Oklahoma, Norman: characterization and functionalization of carbon nanotubes with chloroaniline; hired to do hands on research, write manuscripts & research proposals, substitute teach (with "clickers") & supervise grad/undergrad research students

U. of Wisconsin, Madison: silafluorenes application in photon based data storage & organosilicon analog of carbenes using organic/organosilicon synthesis & characterization

U. of Minnesota, Minneapolis: 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

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

U. of Illinois, Urbana Champaign: mechanism of Isopenicillin N Synthase with iron cysteines to model of the enzyme active site using organic peptide synthesis, organometallic iron synthesis & characterization

State University of New York at Stony Brook: stereoselectivity of heterocyclic amines & their positively charged nitrogen derivatives; research in molecular mechanics software design of transition metal carbonyl

Wayne State U: synthesis, multinuclear solution & solid state NMR & X-ray crystallographic structure solution of organoaluminum & organomercury compounds

U. of South Carolina: organocadmium X-ray crystal structure correlation with solid & solution state ^{113}Cd NMR as a model of metalloprotein active sites

Research Proposals: [one research subcontract with John Hopkins Applied Physics lab funded as PI for $40,000 (2008), one INBRE proposal funded as PI $15,000 (2009), one NSF-MRI proposal funded $200,000 (2000-2002, Cortland, one of 3 research project directors); one NASA/EPSCOR proposal funded as PI $5,090 (2004-2005, ASU); ~20 internal proposals DSU, ASU, Cortland, NYS/UUP & St. John's funded][submitted/not funded: ~30 proposals to: NSF/CAREER, NIH/SCORE, DoD, ACS/PRF, Research Corporation; NIH/AREA (as sole PI) & DoD (as PI, with multiple co-PI) & NSF/DUE ILI as co-PI)

Some Representative Recent Research Proposals:

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 organic, carbon nanotube and organometallic analysis:

a. **2D NMR** – proton proton & proton carbon correlated NMR of functionalized carbon nanotubes, organic and organometallic molecules (COSY, HETCOR, NOESY, HMQC, HMBC, GNOE)

b. **multinuclear high resolution nuclear magnetic resonance spectroscopy** (^{1}H, ^{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 organics (N & O), enamides, Evan's chiral auxiliary, cysteine derivatives

b. **synthetic organometallic chemistry** - Al, Hg, Fe, Si organometallics as well as Ni & Zn pyrazoylborates, silylenes, silaflourenes, (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, kinetic data workup using excel, powerpoint, frontpage, chemdraw, Fortran, PL/C, PL/1, assembler machine language, 2 courses short of computer science BS double major

Selected Publications: (9 publications in refereed journals, 1 lab manual, 3 publications in preparation as principal investigator, 27 presentation at national and regional ACS meetings - 19 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."[Me_2Si] 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 [Me_2Si] Ansa Bridge Promotes Intermolecular C-H and C-C Bond Activation."

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

- 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 towards synthesis of highly functionalized piperidines", 226th ACS National Meeting, New York, NY, September 7, 2003.

- Juliet Hahn*"Stereoselectivity of Orotic Acid Photodimerization by Solvent and pH Effects", Scholar's Day SUNY-Cortland, April '00

- Juliet Hahn* "The Stereoselective Synthesis of Tropanes", Scholar's Day SUNY-Cortland, April '00

- Juliet Hahn* "Organoaluminum Coordination Effect on the Stereoselectivity of Nucleophilic Reactions with 5-Azaadamantan-2-one", Scholar's Day SUNY-Cortland, April '00

- Juliet Hahn* "Stereoselectivity and Optimization of Orotic Acid Photodimerization by Solvent and pH Effects", Middle Atlantic Regional Meeting - March 1997, Pace University at Pleasantville, NY

- Juliet Hahn* "The Stereoselectivity in the Reduction of N-phenyltropanone: Development of a Stereoselective Synthesis Technique", Middle Atlantic Regional Meeting - March 1997, Pace University at Pleasantville, NY

- Juliet Hahn* "An Investigation of a Possible Amphiphilic Effect in the Stereoselectivity of the Reduction of a Heterocyclic Amine", Middle Atlantic Regional Meeting - March 1997, Pace University at Pleasantville, NY

- Juliet Hahn* "Development of a Stereoselectivity Switch for Heterocyclic Amines: the Effect of Aluminum Nitrogen Coordination on the Stereoselectivity of Azaadamantanone" 212th National ACS Meeting August 1996, Orlando

- Juliet Hahn* "Solvent Effects on the Stereoselectivity in the Photodimerization of Orotic Acid" 212th National ACS Meeting August 1996, Orlando

- Juliet Hahn* "Stereoselectivity in the Reduction of an N-Phenyltropanone Derivative" 212th National ACS Meeting August 1996, Orlando

- Juliet Hahn* "Development of the Stereoselectivity Switch: the Effect of Aluminum Nitrogen Coordination on the Stereoselectivity of Azaadamantanone" 211th National ACS Meeting March 1996, New Orleans

- Juliet Hahn*, Neeraj Addagada[#] "Stereoselectivity in the Reduction of N-phenyltropanone", 211th National ACS Meeting March 1996, New Orleans

- Juliet Hahn* "Stereoselectivity in the Photodimerization of Orotic Acid", 211th National ACS Meeting March 1996, New Orleans

- Juliet Hahn* "The Effect of Aluminum Nitrogen Coordination on the Stereoselectivity of Azaadamantanone", 207th National ACS Meeting March 1994, San Diego

- Juliet Hahn* "Stereoselectivity in the Reduction of N-aryltropanone Derivatives", 207th National ACS Meeting March 1994, San Diego

- Juliet Hahn* "Stereoselectivity in the Photochemical Dimerization of Orotic Acid", 207th National ACS Meeting March 1994, San Diego

- Juliet Hahn* "Stereoselectivity of the Photochemical Dimerization of Thymine", Regional ACS Meeting November 1993, Columbia, MO

- Juliet Hahn* "The Synthesis and Characterization of Trialkylaluminum Derivatives of Azaadamantane", Regional ACS Meeting November 1993, Columbia, MO

- Juliet Hahn* "Stereoselectivity in N-aryltropanone Derivatives", Regional ACS Meeting, November 1993, Columbia, MO

Synergistic Activities:
nominated Teacher of the Year, St. John's University
Reviewer Cooperative Grants (US CRDF)
ad hoc reviewer NSF
Session Chair Organic Chemistry Division 228th National ACS Meeting, Philadelphia

Honors: Dean's List (7 semesters, undergraduate USC), President's List (3 semesters, undergraduate USC), Magna Cum Laude (BS at USC), Phi Beta Kappa (undergraduate honor society at USC), Phi Beta Kappa Freshman Scholarship Award (undergraduate at USC), Phi Lambda Upsilon (SUNY, SB; graduate honor society), commended student (at Irmo High School; Columbia, SC; top 4% nationally on PSAT)

Affiliations: Faculty Senate Alternate (DSU), Curriculum Committee (DSU), Faculty Search Committee ASU, advisor to 40 BS/BA Chemistry majors (ASU), SUNY, Cortland Faculty Senate, SJU Student Recruitment Committee, SJU- Faculty Council, SJU Chemistry Department Newsletter Committee, ACS member

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 Noviscky, 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