

# BETTYCEP D. GAILBREATH, PH.D.

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## EDUCATION

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Ph.D., Organic Chemistry, Northern Illinois University, DeKalb, Illinois	2000
Dissertation: "Theoretical Studies of Heteroatomic Systems"	
Recipient of NIU Dissertation Completion Award,	1999 - 2000
B.S., Chemical Engineering, Clemson University, Clemson, South Carolina	1992
Professional Florida Teacher Certificate, Chemistry 6-12, St. Johns River State College, St. Augustine, Florida	2010

## PROFESSIONAL EXPERIENCE

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College of Charleston, Charleston, South Carolina	2013 - present
<u>Adjunct Chemistry Instructor and Lab Instructor</u>	
<ul style="list-style-type: none"><li>Developed lectures and lesson plans based on standard curricula and wrote, administered, and graded all assignments, lab reports, and tests to students in General Chemistry I and II, along with the corresponding Chemistry I and II labs.</li></ul>	
St. Johns River State College, St. Augustine, Florida	2009 - 2012
<u>Full Time College Chemistry Instructor and Lab Instructor</u>	2010 - 2012
<ul style="list-style-type: none"><li>Developed lectures, lesson plans, and labs based on standard curricula and wrote, administered, and graded all assignments, lab reports, and tests to students in General Chemistry I and II, Principles of Biological and Organic Chemistry and Introduction to Chemistry.</li><li>Identified ways to relate experiments and topics to life outside the laboratory, drawing connections with various industries, research, and common products.</li><li>Adapted teaching approach to reach varying learning styles of students, working at their level to ensure understanding of topics.</li><li>Co-managed the lab and supervised two lab assistants. Prepared chemical solutions and lab equipment for the laboratory and managed the chemical inventory. Worked within the department budget to identify and order modernized equipment.</li><li>Represented the Science Department in the design, renovation and move of the chemistry labs.</li><li>Represented the St. Augustine Science Department on the Quality Enhancement Plan Steering Committee, tasked with enhancing the quality of education across the entire college.</li></ul>	
<u>Adjunct Chemistry Instructor and Lab Instructor</u>	2009 - 2010
<ul style="list-style-type: none"><li>Developed lectures, lesson plans, and labs based on standard curricula and wrote, administered, and graded all assignments, lab reports, and tests to students in General Chemistry I and II, Principles of Biological and Organic Chemistry and Introduction to Chemistry.</li></ul>	

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Page 2

**St. Johns Public School District, St. Johns, Florida**

**2008 - 2010**

Substitute Teacher

- Taught various subjects, including science classes, to Elementary and High School students.
- Delivered lessons based on teachers' plans and curricula, relating well to students to ensure their understanding of subject matter.

**Rumson Public School System, Rumson, New Jersey**

**2006-2007**

Substitute Teacher

- Taught various subjects to Elementary and Middle School students.
- Delivered lessons based on teachers' plans and curricula.

**Self-Employed, Rumson, New Jersey, and Raleigh, North Carolina**

**2001 - 2007**

Private Tutor

- Tutored Middle and High School students in Science, Algebra, Geometry and SAT preparation; tutored college students in Organic Chemistry.

**Northern Illinois University, DeKalb, Illinois**

**1996-2000**

Graduate Research Assistant, Biochemistry and Chemistry Departments

**1996-2000**

- Focused on computational chemistry reaction mechanism studies and gained experience in using various mathematical software and molecular modeling applications.
- Conducted high level physical chemistry and organic research on three member heteroatom rings systems and cubane systems.
- Collaborated with physical chemistry professor in experimentally proving theoretical results using mass spectrometer.

Graduate Teaching and Tutoring Assistant, Biochemistry and Chemistry Departments 1996-1999

- Taught Organic and General Chemistry laboratories.
- Developed lectures and wrote, administered, and graded all laboratory reports.
- Prepared chemical solutions for laboratory and supervised students during experiments.
- Tutored Biochemistry, General, Organic, Physical, and Inorganic Chemistry students.

**International Paper, Georgetown, South Carolina**

**1992-1994**

Process and Project Engineer

- Managed installation, startup, and troubleshooting of \$5 million novel ozone bleaching facility and oversaw process improvement projects.
  - Maximized hardwood production rates and trial tested recycled corrugated paperboard.
  - Maintained and completed environmental department and safety audits and participated on environmental task teams involving air emission testing and water treatment alternatives.
  - Supervised 40 production employees on shift schedule, training and updating crew on company safety and environmental policies and regulation.
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Page 3

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### AFFILIATION

American Chemical Society

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### COMMUNITY INVOLVEMENT

First Lego League Coach (2012 - 2015) - Coached a robotics team in which we went to state three years in a row.

Odyssey of the Mind Coach (2008 - 2012) - coached 6 teams in four years with 2 teams going to state

PTK Advisor - active in fundraising, community service; and attended Florida Regional Convention

Science Guest Speaker on several occasions at Durbin Creek Elementary School and Cub Scouts

Parent Teacher Organization Volunteer - Middle and High Schools

American Legion Volunteer (2012- present) - Serve breakfast to veterans every second Tuesday of the month

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### PUBLICATIONS

Gilbert, T.M.; Gailbreath, B.D. "Dimerization of Diboradiazacyclobutadienes to Form Tetraboratetraazacyclooctatetraenes: Computational Study of Boron-Nitrogen Ring Formation and Ring Opening" *Organometallics*, 2001, 20 (22), 4727.

Bachrach, S.M.; Gailbreath, B.D. "Theoretical Study of Nucleophilic Substitution of Two-Coordinate Sulfur" *Journal of Organic Chemistry*, 2001, 66, 2005.

Gailbreath, B.D.; Pommerening, C.A.; Bachrach, S.M.; Sunderlin, L.S. "Potential Energy Surface of  $\text{SCl}_3$ -" *Journal of Physical Chemistry A*, 2000, 104, 2958.

Bachrach, S.M.; Gailbreath, B.D. "Ring Strain Energies of Tetraphospha- and Tetraarsacubanes" *Tetrahedron Letters*, 1998, 39, 4211.

Bachrach, S.M.; Gailbreath, B.D. "Remarkable Deprotonation Energies of Tetraphosphacubanes" *Journal of American Chemistry Society*, 1998, 120, 3528.

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### PRESENTATIONS

"Nucleophilic Substitution at Sulfur," Doctoral Dissertation, Department of Chemistry and Biochemistry, Northern Illinois University, DeKalb, Illinois, March 2000.

"Theoretical Study of the Nucleophilic Substitution of Sulfides," Poster, American Chemical Society National Conference, San Francisco, California, March 2000.

"New Bleaching Technique," International Paper Vice Presidents Meeting, International Paper, Georgetown, South Carolina, March 1994.

"Steam Consumption in the Pulp Mill," Managerial Meeting, International Paper, Georgetown, South Carolina, June 1993.