

4. Complete the mechanism for the combustion reaction of $\text{C}_2\text{H}_5\text{OH}$ and HNO_3 .

Step 1: Fast, endothermic: $\text{C}_2\text{H}_5\text{OH} + \text{H}^+ \rightarrow \text{C}_2\text{H}_5\text{OH}_2^+$

Step 2: Slow, RDS: $\text{C}_2\text{H}_5\text{OH}_2^+ + \text{NO}_2 \rightarrow \text{C}_2\text{H}_5\text{O} + \text{H}_2\text{O}$

A) Write an equation for the overall reaction.
B) Sketch an energy diagram.
C) Show that the rate law is $-\Delta[\text{C}_2\text{H}_5\text{OH}] / \Delta t = k_{\text{obs}} [\text{C}_2\text{H}_5\text{OH}][\text{H}^+][\text{NO}_2]$



the chemical bond

Fall 2005
University of Florida
Department of Chemistry

uf's nobel prize winning connection

Robert H. Grubbs, who earned degrees in chemistry from UF, has received the 2005 Nobel Prize in Chemistry. An organic chemist whose work on catalysis has led to a wide variety of applications in medicine and industry, Grubbs is currently the Victor and Elizabeth Atkins Professor of Chemistry at the California Institute of Technology in Pasadena. He shares the Nobel award with Yves Chauvin and Richard Schrock. The winners will split a \$1.3 million prize, which will be presented in December at a ceremony in Stockholm, Sweden.

The trio was cited specifically for "the development of the metathesis method in organic synthesis." Metathesis is an organic reaction in which chemists selectively strip out certain atoms in a compound and replace them with atoms that were previously part of another compound. The end result is a custom-built molecule that has specialized properties, which can lead to better drugs for the treatment of disease or better electrical conducting properties for specialized plastics, for example.

Grubbs earned his bachelor's and master's degrees in chemistry from UF in 1963 and 1965, respectively.

After completing his PhD in chemistry at Columbia University, he spent a year at Stanford University as a postdoctoral fellow and then joined the Michigan State University faculty in 1969. He has taught at Caltech since 1978.

As a UF student working in an animal nutrition lab, Grubbs was convinced by a friend to work with Chemis-



opportunity

This is a picture of the second floor breezeway in Leigh Hall. As you can see, our halls are in need of some benches to seat our students while they await classes and labs. If you are interested in making a donation to purchase benches, please designate your gift for "chemistry benches." See the back page for contribution directions. A \$500 contribution to this project will be recognized with a brass plaque with your name on the bench.

try Professor **Merle Battiste**. To Grubbs' surprise, he enjoyed working in a chemistry lab. "I liked the mechanical aspects of working in the lab and the combination of physical and intellectual challenges," he says. Battiste, who is now a professor emeritus of chemistry, became Grubbs' advisor. The two will have the chance to see each other again soon. Grubbs received 15 tickets to the Nobel awards dinner in Stockholm, and Battiste will be among his guests.

new staff that have joined Chemistry since last fall are **Carol Blankenship**, **Gena Borrero**, **Addie Combass**, **James Folks**, **Gay Hale**, **Robert Johnson**, **Julie McGrath**, **Lawrence Westra**, and **Ronald Wright**. Welcome to Chemistry.



new faculty



KENNETH MERZ is a new Professor in the Department of Chemistry and a member of the Quantum Theory Project. He comes to UF from The Pennsylvania State University, where he had taught since 1989. From 1998 to 2001, he also held positions at Pharmacoepia, Incorporated, a drug development company. Kennie earned his PhD in organic chemistry with Michael Dewar in 1985 from the University of Texas at Austin

and held postdoctoral fellowships at Cornell University and the University of California, San Francisco. His research interests include computational chemistry and biology, and he is a fellow of the American Association for the Advancement of Science.

He is teaching physical chemistry and organic chemistry.

SUKWON HONG, an assistant professor of chemistry, earned his PhD in organometallic chemistry with a specialization in asymmetric catalysis in 2003 with Tobin Marks at Northwestern University. He received his bachelor's and master's degrees in chemistry from Seoul National University in South Korea. Sukwon was a postdoctoral research associate at the

Scripps Research Institute in La Jolla, California before coming to UF. His research focuses on the development of new asymmetric catalysts for use in the total synthesis of biologically important natural products and in olefin polymerization. Hong teaches

organic chemistry and spectroscopy.

JOHN MITCHELL, a Lecturer in general chemistry, joins the department from Huntingdon College. He previously taught at the Air Force Academy, and he earned his Ph.D. in chemistry in 1998 at the University of Mississippi. In addition to lecturing in general chemistry, John will be active in undergraduate advising.



a note from the chair

The Fall 2005 semester has brought many new challenges to the Department of Chemistry in the form of a flood of undergraduates in our classes. Chemistry majors are up to over 500, putting increased demands on our upper level teaching and laboratories.

This fall, a massive first year class at UF has put enormous pressure on the lower level lectures and labs, particularly in the general and organic chemistry areas. Indeed, for the first time since the advent of "tracking" at UF in the 1990's we had to turn some students away from the first general chemistry lab and ask them to wait until the spring semester. As it is now, our teaching lab facilities are in constant use Monday through Friday with the latest labs ending after 9 PM.

Thanks to outstanding department graduate recruiting, we have had sufficient teaching assistants to meet the laboratory and discussion sections. However, finding classroom lecturers continues to pose a problem because of the enrollment growth and the nine faculty retirements in 2003. Associate Chair **Eric Enholm** has done a great job finding the talent to staff our classrooms. Emeritus faculty have been a terrific resource, with **Merle Battiste**, **Gus Palenik**, and **Sam Colgate** taking on sections in 2005. In addition, **Jason Portmess** and **Margaret Deyrup** have done excellent work in the classroom for multiple semesters in 2005.

The enrollment growth at UF is a

reflection of the large increase in students in Florida's K-12 classrooms. Several other math and science department chairs and I have embarked on an initiative to significantly increase the number of certified math and science teachers graduating from UF each year, particularly in chemistry, physics, math, and biology for the 6-12 grades. This program seeks to make teaching a professional program for undergraduates that begins with field experiences in the first year at UF, and we hope to provide scholarships and internships to recognize students who enter this socially important career. If you are interested in supporting this program, please let me know—private funds and endowments will be crucial to encourage bright and motivated students to consider teaching chemistry.

I'd like to recognize our Outstanding Alumni Award winners for the last four years. **Alan M. Lovelace** (BS '51, MS '52), **Mike Collins** (BS '65), **Richard Turner** (Ph.D. '71), and **Rob Kincart** (BS '72) are wonderful ambassadors for UF and the chemistry department. This issue includes a biosketch for Rob, who received the award this fall on homecoming weekend.

Our alumni and friends have once again generously supported our department with their gifts through the UF Foundation, and we deeply appreciate the support. I wish all of you a safe and prosperous 2006.

—Dave Richardson



2005 outstanding alumnus

Robert O. Kincart is the president and founder of American Compliance Technologies, Inc. in Bartow, Florida, an environmental sciences, engineering and contracting firm established in 1987. He co-founded American Communications, Inc. in 1995, a wireless communications retail chain, and is the president and founder of The Kincart Group, Ltd., a real estate holding and development firm established in 2002.



2005-2006 student awards

The department recognized graduate students with several awards in the past year. The Ruegamer Charitable Trust, established by **William and Arlene Ruegamer**, provides scholarships for students of high scholastic standing in biochemistry. The recipients for 2005-2006 were **Despina Bougioukou, Lisa Regalla** and **Jemy Gutierrez**. The Procter & Gamble Company and Dow Chemical Company provided for awards based on overall excellence in research by senior graduate students. Dow Awards were given to **Andrew Lampkins, Christophe Grenier, Travis Baughman, Rob Sides, Igor Schweigert, Despina Bougioukou** and **Haiyan Wang**. Procter & Gamble Company Awards were given to **Daniel Kuroda, Kwabena Ampohsah-Manager, Xihong Wu, Tim Garrett, James Yang, Lin Wang** and **Jose Valle**. The Petra Chemicals Awards for Organic Chemistry Research were given to **Andrew Lampkins** and **Heather Hillebrenner**. Teaching Award Winners for 2005 were **Joanna Barbara, Erin Burke, Jedidiah Hastings, Kathleen Herrera, Daniel Kuroda, Fedra Leonik, Piotr Matloka, Michael Napolitano, Karla Radke, Julia Raymer, Denise Sharbaugh,** and **Nancy Villa**.

Undergraduate awards were given to **Mikolai Fajer** (Hypercube Scholar Award), **Candice Abrams, Vanessa Flores,** and **Andrew Schneider** (Undergraduate Peer Mentor Awards), **Casie Hilliard, Edward Miller,** and **Kristen Mesiack** (Beckman Scholar Awards), **Joy Wattawa** (Fulbright Scholarship Award), **Edwin Homan** (Goldwater Award), **Mikolai Fajer** (Chemical Physics Scholarship), **Anthony Colombo** and **Kristen Downs** (Crow Scholarships), and **William Beeson** and **Carina Emory** (University Scholars Awards).

—Benjamin Smith

keep in touch with Chemistry

We want to hear from you! Send your update to: Maribel Lisk, PO Box 117200, Gainesville, FL 32611-7200. Please include your degree (BS, MS, PhD, etc.), graduation date and e-mail address if you have one. Photos are welcome, too! You can also e-mail your update to chairadmin@chem.ufl.edu. To make online contributions to the department, go to <https://www.ufl.edu/OnlineGiving/CLAS.asp>. Select "Chemistry 001401" and continue through the prompts.



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