

Geophysical Union for 2006 to **Roberta Rudnick** and second by several attempts to recruit faculty into leadership positions of research institutes here and abroad during the 2006 calendar year.

LETTER FROM THE CHAIR

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2005-2006 – SO FAR SO GOOD, BUT WHAT NEXT?

Have you seen the text from **President Mote's** State of the Campus 2006 address last September? It has the same title. No, I'm not going to plagiarize the President's text, but I am going to follow a similar theme.

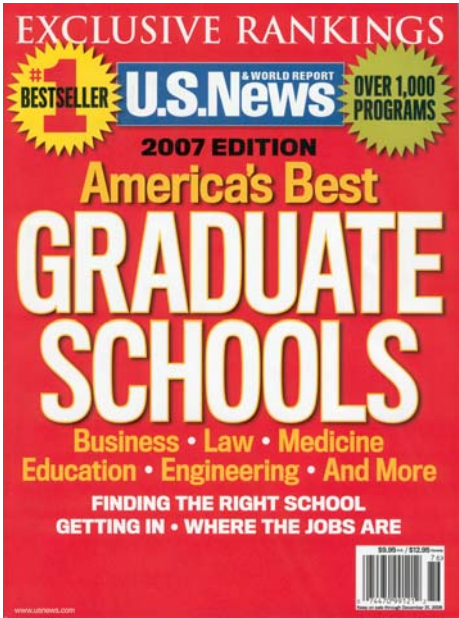
We continue to search for geophysics faculty to complement our strength in geochemistry (more below), and we have an exciting field of strong candidates, many of whom would make welcome additions to our Department. Departments either evolve or stagnate – there is no “*status quo*” in the academic world, if you're standing still everyone else is passing you! So, this is a good point in the Department's evolution to review our progress so far and to see where we are going.

Sash (Saswata Hier-Majumder) has now joined our faculty after his post-doctoral time at Yale University, which means that we are now offering Geophysics as part of our Undergraduate Program for the first time in several years, and **Andy Campbell** has established the Laboratory for Mineral Physics. We welcome **Dan Lathrop** (Professor of Physics and Director of the Institute for Research in Electronics and Applied Physics) as an Affiliate Professor in our Department and **Yingwei Fei** (Senior staff member, Geophysical Laboratory) as an Adjunct Professor (see their profiles on page 6).

My brief when I was hired in 1990 was to build a great department, using as stepping stones the foundations laid

by **Luke Chang** in the 1980s and **Galt Siegrist** in the 1970s (see FACULTY HIGHLIGHT on p. 8 of this GeoGram). A great department is made up of good people who excel—faculty, students and staff—supported by cutting-edge facilities and infrastructure.

Taking my lead from the President's address, a dispassionate view of what the Department has achieved is that it's



Our specialty in Geochemistry was ranked by U.S. News and World Report as 10th among all U.S. universities, and 4th among public institutions.

at its historical best! However, much more remains to be done.

We have a great faculty, several of whom are among the most prominent members in their respective fields. The prominence of our faculty is highlighted first by the Bowen Award of the Volcanology, Geochemistry and Petrology Section of the American

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“...a dispassionate view of what the Department has achieved is that it's at its historical best!”

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We have wonderful students, exemplified by **Kate Burgy** winning the J. R. Dorfman Prize for Undergraduate Research in Spring 2006, and **Andy Masterson** (see SENIOR THESIS PROGRAM on p. 10) being chosen as the CMPS graduation speaker. It is a pleasure to acknowledge that an alum from our Graduate Program, **Gary Solar**, received the 2006 Biggs Award for Excellence in Earth Science Teaching at this year's Annual Meeting of the Geological Society of America. And we have a dedicated professional staff to keep the place running!

Our facilities are improving despite the antiquity of the buildings. We are investing more than \$1M to enhance our facilities in Geochemistry, which will result in improved temperature control in the Gas Flow Mass Spectrometry Laboratory, improved rock-cutting and mineral separation facilities, and a doubling in the size of the Clean Laboratory to 1000 square feet in support of our work in Isotope Geochemistry. Oh, and **Rich Walker** is buying a new Thermal Ionization Mass Spectrometer — a ThermoElectron Triton, our tenth mass spectrometer of some kind—using funds from the National Science Foundation, NASA and the College. In the Geology Building, some of the infrastructure is being replaced throughout, and we are taking advantage of this opportunity to improve the ambiance in our teaching laboratories with new ceilings and a coat of paint.

An essential step in the development of any great department is its ability to form partnerships to enhance its impact. We are working closely with our colleagues in the Department of Astronomy and others in the region to develop a **Center for Planetary Origins**. This strategic move will position us at the forefront of research on solar system materials and the vexing question of how planets are formed.

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“We are working closely with our colleagues ... to develop a Center for Planetary Origins.”

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OK, that’s all descriptive, but what do the national and international communities think about us? Our department is an international star. It is one of the top programs in the world and a premier center for fundamental research in Geochemistry. How can I assert such a claim?

One of the highlights of the year was the Annual U.S. News and World Report Rankings, in which our Geochemistry Program ranked 10th among all universities in the Nation and 4th among public universities. In addition, the Geosciences at UMD is ranked 18th worldwide based on a citations analysis by the Institute for Scientific Information over the last decade using total cites; based on cites per paper we rank 13th worldwide, which perhaps is a better reflection of our quality. In fact, if we remove huge government organizations such as NASA, NOAA and the Russian Academy of Sciences from the list, we rank 8th among all U.S. universities and 11th among all universities worldwide! This is huge for us. It is what President Mote has referred to as “value added” — as we get better so your degree from UMD becomes that much more respected. This Department really is very good!

Why is this so significant? Apart from the enhanced visibility that our program inevitably receives by achieving a high ranking, and as President Mote has argued for the campus, it changes the expectations that everyone has — on Campus and off — about our department. We expect, the University expects, and many of our peers expect us to maintain and improve our reputation and our ranking. This is the difficult part — getting a ranking in the first place is one thing, keeping it is quite another! To borrow from President Mote, in his address he quotes Henry Ford as saying “If you think you can, or if you think you can’t, you’re right.” Well, we thought we could, we were right, and we will maintain this level of achievement. More than that, we will get even better.

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“Our department is an international star. It is one of the top programs in the world and a premier center for fundamental research in Geochemistry.”

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As a consequence of our strength in geochemistry, and now our growth into geophysics, our Department offers extraordinary career opportunities for young scientists. And as you know, our graduates are extremely successful — most of our graduates over the past thirty years remain engaged in full-time careers in the geosciences.

Our role in the flagship campus of the State university system is to conduct research at the highest level, one that leads to international acclaim, to take a leadership role in defining new directions in geochemistry and geophysics, and to provide absolutely the best opportunities in education in the geosciences. Our



Mike Brown looking for answers while leading an international field trip after the Granulites & Granulites 2006 conference in Brasilia, Brazil.

faculty and students are working at the edge of discovery in some of the most exciting research activities in the world, ranging from investigating the origin of planetary systems to the conditions attending the emergence of life on Earth. We take our role as an international leader seriously and want our prospective students to join with us in pioneering research that generates new knowledge about how the Earth and planets work while addressing the serious challenges that confront society. This is the benefit of a high quality faculty as it translates into high quality education.

In addition to our contributions to science education across the Campus, we maintain our presence in the Honors Program and are committed fully to supporting the Earth, Life and Time Program within College Park Scholars. I would be remiss not to mention that the Earth, Life and Time Program is widely regarded as the best among the dozen or so programs in College Park Scholars. Additionally, we have a group of faculty developing a new “marquee

course” designed to convey the excitement of science to Liberal Arts students.

Life is cyclic in a State university and, once again, we are in the election season and we now have a change of Governor in the State of Maryland. As a Campus, our budget has recovered to the same level in dollars that we received four years ago. It is difficult to maintain upward motion as we strive for excellence as the level of State support declines in real dollars. This is where your contributions in support of our programs can make the difference. We can only achieve greatness together!

Our mission is to transform lives through exceptional educational opportunities and to change the world through knowledge of the highest order. As a fast rising department, we have demonstrated the will and ability to succeed. Every year alumni, faculty, friends and corporations create opportunities for students and further research activities by providing donations, matching gifts, planned gifts, memorial gifts, gifts-in-kind and donations of stock. Your philanthropic investments will provide support to fund student scholarships, recruit and retain top faculty, enhance laboratory facilities and reinforce excellence and innovation in our academic programs. Your support will help make our department truly great with global reach and impact. The department will help you design a gift or giving program that fits with your interests. For more information, e-mail (rosalind@geol.umd.edu) or call Rosalind Pinkard at 301-405-4065.

Michael Brown

October 2006

GEOGRAM 2004-2006

editor, designer, feature writer,
and photographer

Assoc. Prof. A. Jay Kaufman



The Sciences

PH.D. PROGRAMS RANKED BEST BY DEANS AND DEPARTMENT CHAIRS

EARTH SCIENCES SPECIALTIES

GEOCHEMISTRY

1. California Institute of Technology
2. Pennsylvania State University–University Park
3. University of California–Berkeley
4. Massachusetts Institute of Technology
5. Univ. of Michigan–Ann Arbor
6. Columbia University (NY)
7. Yale University (CT)
8. Harvard University (MA)
9. Stanford University (CA)
10. University of Maryland–College Park

GEOLOGY

1. Stanford University (CA)
2. Massachusetts Institute of Technology
3. California Institute of Technology
4. Pennsylvania State University–University Park
5. Univ. of Michigan–Ann Arbor
6. University of Texas–Austin
7. University of Arizona
8. University of California–Berkeley
9. Univ. of Wisconsin–Madison

10. University of Washington

GEOFYSICS AND SEISMOLOGY

1. California Institute of Technology
2. Massachusetts Institute of Technology
3. Stanford University (CA)
4. University of California–Berkeley
5. University of California–San Diego
6. Columbia University (NY)
7. Harvard University (MA)
8. University of Texas–Austin
9. Princeton University (NJ)
10. Colorado School of Mines
- Univ. of California–Los Angeles

PALEONTOLOGY

1. University of Chicago
2. Harvard University (MA)
3. Univ. of Michigan–Ann Arbor
- Yale University (CT)
5. University of California–Berkeley
6. University of Kansas
7. University of Cincinnati
8. University of Iowa
9. University of Texas–Austin
10. Ohio State University

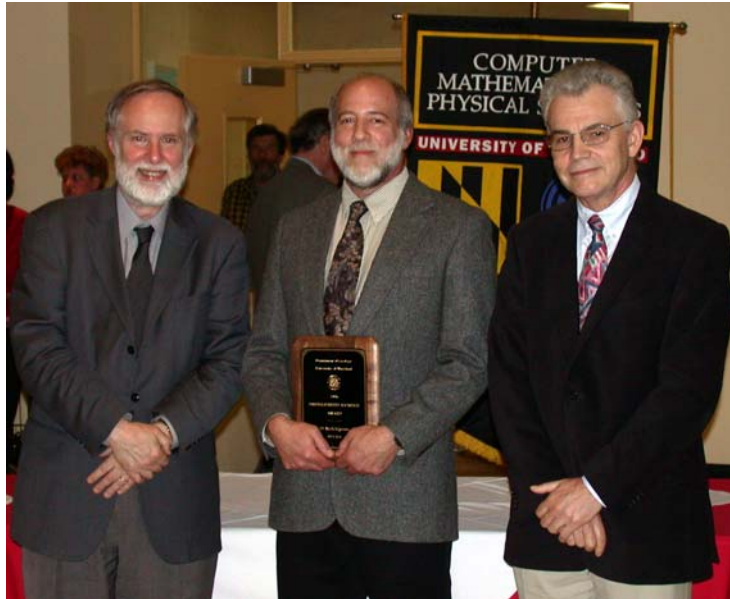
METHODOLOGY

Rankings of doctoral programs in the sciences are based on the results of surveys sent to academics in each discipline during the fall of 2005. The questionnaires asked individuals to rate the quality of the program at each institution on a 5-point scale. The universe of schools surveyed consisted of those that awarded at least five

doctoral degrees. Questionnaires were sent to the department heads and directors of graduate studies. The response rate for the earth sciences was 52%. Specialty rankings are based on nominations by department heads and directors of graduate studies at peer schools from the list of schools surveyed. These respondents ranked up to 10 programs in each area.

DISTINGUISHED ALUMNUS

The 2006 Geology Distinguished Alumnus was **Professor Mark D. Feigenson** of Rutgers, The State University of New Jersey. Mark received a BS with honors from the University of Maryland in 1974. Originally a physics major, he switched to geology after taking an introductory course from **Professor Galt Siegrist**. He wrote his senior thesis on the Woodstock quartz monzonite, with **Jerry Weidner** as advisor. Mark then went on for a Master's degree at George Washington, working in the Dominican Republic with **John Lewis**. While at GWU, he began a collaboration with scientists from the Carnegie Institution's Department of Terrestrial Magnetism (DTM) where he was introduced to isotope geochemistry. Mark then received a Phelps-Dodge award to study at Princeton for his Ph.D., where he split his time working on magma physics with **Frank Spera** and mantle geochemistry with **Al Hofmann**, back at DTM.



Prof. Mark D. Feigenson (center) receiving the 2006 Distinguished Alumnus Award at the CMPS Academic Festival with Dean Steve Halperin (left) and Chair Michael Brown (right)

sharply as a given volcano moves off the hot spot. This work was one of the stimuli that resulted in the Hawaii Scientific Drilling Project.

insights on the expectations of writers, the distribution of ranked proposals, and who gets funded. She provided common reasons for both high and low ratings, and laid out a strategic program for success.

In her talk, considerable time was devoted to the creation of testable hypotheses, and tips on writing. According to Dr. Ransom, turgid prose is an enemy of clarity (and funding).

After the two hour presentation and lunch with **Assoc. Dean Ron Lipsman**, **Chair Mike Brown**, and others, Barbara was given a short tour of the Geochemical Laboratories, and then met

With Hofmann, he extended the procedure known as geochemical inverse modeling, and used the technique to constrain geophysical models of melt production.

In 1982, Mark started teaching at Rutgers University, and began a long collaboration with **Mike Carr**, working on Central American volcanology. Over the years, they have studied the geochemistry of volcanoes from Guatemala to Panama, and showed how the changing dip of the subducted plate controls the chemical variations in the lavas along the arc. Most recently, Mark used Pb isotopes of the lavas to demonstrate that the volcanoes of central Costa

Rica are distinct from the rest of the arc, and are tapping remnants of the Galapagos hot spot. This result implies that the Caribbean Plate originally formed in the Pacific Ocean basin was transported to its current location over the past 100 million years.

For more information about Mark, check out his website at <http://geology.rutgers.edu/feigenson.shtml>

DISTINGUISHED LECTURER

On February 3rd the College of Computer, Math & Physical Sciences along with the Department of Geology presented a special workshop by **Dr. Barbara Ransom** (Marine Geology and Geochemistry program director at the National Science Foundation) addressing the successful preparation of grant proposals. The workshop was initiated by **Assoc. Professor Jay Kaufman** in support of our junior faculty, but was tailored to a more diverse audience and attended by over 50 scientists and administrators across the college.

Dr. Ransom's entertaining presentation titled "Fund Your Science!!!" included

with our junior faculty for a more informal discussion of funding strategies and resources. We greatly appreciated Dr. Ransom's outreach efforts to the department and college.



Dr. Barbara Ransom, NSF

ALUMNI NEWS & VIEWS

Please submit your Geology Department alumni news on-line at <http://www.geol.umd.edu/pages/Department/alum.htm>



Josh Long '04 and Ashley McCleaf '06 married June 10, 2006 in Frostburg, Maryland. They are now both in graduate school at Northern Arizona University in Flagstaff.



1976 Field Trip to Keyser Quarry, West Virginia

This picture was taken by *Galt Siegrist* on a 1976 field trip to the Silurian-Devonian Keyser Quarry in West Virginia. We have only been able to identify some of the people, so let us know who else is here.

Front row (l to r): *Tom Gore* (blue sweater), *Pam Wheelless* (denim pigtails), *Kim Walbe* (holding pylon), *Dr. Peter Stifel* (hubcaps); second row: *Bob Verta* (fatigue jacket), *Adrian Burke* (grey pigtails), *John Ossi* (plaid shirt); third row: *Fritz Meyer* (blond hair); on cab: *Ken Kaman* (plaid shirt), *Patty Brack*, (maroon sweater), *Michael Eisner* (dark frizzy hair); on winch: *Frank Chapelle* (dark glasses) and *Bruce Muirhead*.

Department of Geology alumnus *Russell Meyer '99* entered the Fear the Turtle Sculpture Scavenger Hunt for one simple reason - he wanted to win one of the turtle sculptures. Of course so did his wife, Stephanie. So they spent three full weekends this past September running around the region getting their pictures taken with all 50 of the nifty turtles. A little friendly competition never hurts anything! In fact, Terp fans turned out in droves (106 people in all were eligible for the grand prize based on getting their picture with all 50 turtles) to enter the scavenger hunt contest.

A drawing was held the week of October 2 to determine which of the 106 entries would win the grand prize. The first name out was Russell Meyer - who will get to take home "Maryland My Maryland" - a sculpture by

artists Barbara and William Gordon. It was sponsored by the University of Maryland's Student Government Association, and was displayed in front of the Stamp Student Union on campus. The turtle now sits proudly on his back deck, but he is planning on landscaping his backyard around the sculpture.

A geologist by training, Russell Meyer graduated from Maryland in 1999; he did his senior thesis, titled "The Effects of Chemical Composition on the Optical Properties and Cell Parameters in the Riebeckite-Magnesioriebeckite Series" with *Prof. Ann Wylie*. Following graduation Russell worked in an environmental lab for four years, but he is now employed as a geologist for a Gaithersburg, Maryland engineering firm.

Russell first saw the turtle sculptures last April during Maryland Day, the

university's annual open house. He read about the contest in the alumni newsletter and saw a story about it on WUSA TV (Channel 9) in Washington, D.C.



Geology Department alumnus Russell Meyer '99 with his prize turtle

MEET OUR AJUNCT FACULTY

Daniel Lathrop is a Professor in the Department of Physics and Director of the Institute for Research in Electronics and Applied Physics (IREAP) at the University of Maryland. Dr. Lathrop received his Ph.D. in Physics from the University of Texas at Austin in 1991,



Daniel Lathrop, Department of Physics and Director of IREAP

and then began a post-doctoral fellowship at Yale University. From 1994 to 1997 he was an Asst. Prof. at Emory University and then joined the University of Maryland in 1997.

His current research interests include magneto-rotational instability, magneto-turbulence and dynamos, and strongly non-linear surface waves. His recent work with liquid sodium models promises to have groundbreaking results which could change our view of the Earth's outer core.

Dr. Lathrop's laboratory experiments are designed to simulate the dynamos operating in the interiors of planetary bodies, which are the source of their magnetic fields. By building a scale

model of the Earth's core, filling it with tons of reactive liquid sodium, and spinning the orb, he ultimately aims to

create a homogeneous dynamo in the lab and demonstrate a self-generating magnetic field.

Dan's research has excited his colleagues as well as the public press. It has recently been featured in Discovery and Geotimes magazines, and also on NOVA. He has received many fellowships and awards, including a Presidential Early Career Award in 1997, and just last year he was elected a Fellow of the American Physical Society.

Daniel Lathrop is on the cutting edge of his field. As an Adjunct faculty member in the Geology Department, Lathrop supports our new growth in Geophysics. This year he is giving the honorary Bullard Lecture at the fall meeting of the American Geophysical Union in San Francisco titled "Building Laboratory Models of Planetary Cores."

You can find more about Dan Lathrop and his experiments at <http://www.physics.umd.edu/people/faculty/lathrop.html>

Dr. Sorena Svea Sorensen received her PhD from UCLA in 1984 and then joined the staff of the National Museum of Natural History, Smithsonian Institution. Her research concerns fluid-rock interactions in convergent margins, which she addresses by means of field work and a variety of methods, especially cathodoluminescence imaging and trace element and isotope geochemistry.

Currently Sorena is collaborating with Geology Department **Profs. Sarah Penniston-Dorland** and **Bill McDonough** on lithium isotope and trace element compositions of jadeite and eclogite from subduction zones in Central America and the western USA.

Dr. Sorensen has a secondary interest in mineral chemistry, and is an authority on rare-earth-element-rich epidote minerals and jadeitite, the gem variety of jade. During the past 10 years, she has received research support from the

Sprague and Becker Funds of the Smithsonian Institution, the Department of Energy, and the National Science Foundation. During her career, Sorena has conducted field programs in



Sorena Sorensen, Smithsonian Institution, at the Shwedagon Pagoda, Burma praying for good luck in the jade mines

California, Nevada, Washington State, the Dominican Republic, Venezuela, Burma, and Guatemala.

Dr. Sorensen has been an editor for *Journal of Petrology* and *Journal of Metamorphic Geology*. She likewise served as a Distinguished Lecturer and Councilor of the Mineralogical Society of America, and is a fellow of both MSA and the Geological Society of America. She has served as President of the Geological Society of Washington, and Chair of the National Museum of Natural History's Senate of Scientists. Since 1988, Dr. Sorensen has served as the Curator-In-Charge of the Smithsonian's Rock and Ore Collections, and has been a past curator of the Janet Annenberg Hooker Hall of Geology, Gems and Minerals.

More information on Dr. Sorensen's research can be found at <http://www.minerals.si.edu/research/summary/sorensen.htm>

Antonio (Tony) J. Busalacchi is Director of the University of Maryland Earth System Science Interdisciplinary Center (ESSIC) and a Professor in the Department of Atmospheric & Oceanic Science. Tony came to ESSIC in 2000, after serving as Chief of the NASA Goddard Laboratory for Hydrospheric Processes.

In 1999, he was appointed Co-Chairman of the Scientific Steering Group for the World Climate Research Programme on Climate Variability and Predictability (CLIVAR). Tony's ongoing area of research is the role of tropical ocean circulation in the coupled climate system. He has a 1982 doctorate in oceanography from Florida State University.

The goal of ESSIC is to enhance understanding of how the atmosphere-ocean-land-biosphere components of the Earth interact as a coupled system. This is accomplished via studies of the interaction between the physical climate

system (El Nino) and biogeochemical cycles (greenhouse gases, changes in land use and cover). Busalacchi also serves as Director of NOAA's Cooperative Institute for Climate Studies (CICS) that ESSIC administers as part of a joint NOAA-University of Maryland cooperative agreement.

Dr. Busalacchi has received numerous awards and honors. Among these, he is a Fellow of the American Meteorological Society. In 1991, he was the recipient of the prestigious Arthur S. Flemming Award, as one of five outstanding young scientists in the entire Federal Government. In 1995 he was selected as Alumnus of the Year at Florida State University, in 1997 he was the H. Burr Steinbach Visiting Scholar at Woods Hole Oceanographic Institution, in 1999 he was awarded the NASA/Goddard Excellence in Outreach Award and chosen by President Clinton to receive the Presidential Rank Meritorious Executive Award.



Antonio Busalacchi, Director of ESSIC and Professor in the Department of Oceanic and Atmospheric Sciences

More information about Antonio Busalacchi and ESSIC can be found at <http://essic.umd.edu/~tonyb/tonyb.html>



Yinwei Fei, Carnegie Institution of Washington

Dr. Yingwei Fei received his B. S. from Zhejiang University, China (1982), and Ph.D. from City University of New York (1989). Fei, as he is commonly known, was awarded a Distinguished Scholar Dissertation Award from the

University for his thesis work on thermodynamics of reactions at high pressure and high temperature. He joined the Carnegie Institution of Washington Geophysical Laboratory in 1988.

Dr. Fei's research interests include composition and structure of the interiors of the Earth and Mars, mantle evolution, core and mantle differentiation, role of water and hydrous phases in a subducted slab and deep mantle, physical properties of materials at high pressure and temperature, phase transformations and thermodynamic calculations, and material synthesis at high pressure. He has published more than 100 papers in scientific journals, and has served as an associate editor for *American Mineralogist*, *Chinese Science Bulletin*, and *Journal of Geophysical Research*.

Fei received the Hou Defeng Medal from Chinese Academy of Sciences in

1990, the Norton Senior Fellowship (1992-1996) from Norton Company, the Mineralogical Society of America Award (1999), and the Crosby Visiting Lectureship from Massachusetts Institute of Technology (2000).

Current Fei is working with University of Maryland Profs. **Bill McDonough** and **Andy Campbell** as well as UMD undergraduate student **Robert Thomas** on his senior thesis project titled "Effect of the FCC to HCP Phase Transition [in iron crystals] on Trace Element Partitioning Between Metal and Sulfide Melt." The results of this high pressure study will be used to test assumptions about the partitioning behavior of rhenium, osmium, and platinum in the Earth's inner and outer core.

More information about Yinwei Fei and the Multi-Anvil Group at the Carnegie Institution of Washington can be found at <http://www.gl.ciw.edu/multi-anvil/>

DEPARTMENT HIGHLIGHTS

FACULTY HIGHLIGHT

Galt Siegrist

It is safe to say that without the sustained and heroic efforts of *Galt Siegrist*, our 2006 FACULTY HIGHLIGHT, it is unlikely that we would be department we are today. Galt was instrumental in the creation of the both the Geology Department and the graduate program. The history of the department, as told by Galt, is an intriguing tale of fits and starts.

Geology started at Maryland with *Leonard Furo* who came from Texaco in 1964. At that time, Siegrist was searching for rutile deposits for the Glidden Paint Co. in Baltimore after completing his Masters and Ph.D. at the Pennsylvania State University. Furo knew Siegrist and suggested that he apply in 1965 for a position in the Agronomy Department to help out with the huge geology classes he was facing. With offices in the basement of H.J. Patterson Hall, they taught 1000s of undergraduate students in those early years, with up to four sections of 300+ each semester. To support these burgeoning numbers, *Peter Stifel* was hired in 1966 and then both *Tony Segovia* and *Jerry Widener* in 1968.

As coordinator of this growing block in Agronomy, Siegrist first lobbied for a separate program within the department, and then to sever the umbilical cord altogether. "While we made a lot of money for Agronomy, we were a burr in their saddle," said Siegrist. The program was established with concentrations in mineralogy, historical geology, structural geology, and petrology. By that time, Furo was sick with cancer and could not teach, although he was generously supported by Agronomy until his death in 1971. *Ann Wylie* was hired in 1972 to teach optical mineralogy and economic geology, and that same year the Geology Department was born.



Galt was appointed as acting chair of the department, which grew to 200 majors by 1975. The senior thesis program became a requirement once the department was formalized, but it was only one semester and "very Mickey Mouse in the beginning," said Siegrist. There were 40 to 50 theses running at the same time, so "we siphoned off a lot of them to the Chemistry Department," where geochemistry had started in earnest with the hires of *George Helz*, *Shelly Sommer*, *Ervin Gregor*, *Harry Rose*, and *Izzy Addler*.

By the mid 1970s Galt and Ann decided it was time for a graduate program and began writing a proposal to the faculty senate. "I put in the nouns and Ann put in the verbs," said Galt. The initiative, however, was vehemently opposed by the Chair of the Chemistry Department, so Galt had to push for the program at up to 15 senate meetings, and was continually driving back and forth from Annapolis.

"My finest moment was when we got the program started in 1977," said Galt, and we were able to bring in *Luke Chang* as Chair. In 1981 the department moved into the abandoned Fisheries Building. "There were fish scales everywhere!" said Siegrist, which may be why he took a

sabbatical the following year to study carbonates in Guam.

For the next eight years Siegrist continued his work in Guam and took a handful of graduate students there to study carbonate growth and diagenesis. He also began to update the 1940s vintage USGS geological map of the island, which had a lot of mistakes. He said that this was probably because they were always on the lookout for Japanese military squads still present on the island. Siegrist's topographic and quadrangle based geological map compiled over two decades is now at the USGS and should be available within the year.

Siegrist was offered a job at the University of Guam in 1990 and left Maryland. After 25 years of service to the department "it was time to do my own thing," he said. Galt was director of a USGS funded water institution in Guam for five years and retired from that university in 2003. He currently lives in Queenstown, MD with his wife *Alicia Watson* ('75) who teaches oceanography at Anne Arundel Community College. Galt currently coaches soccer at St. Peter and Paul High School in Easton when he isn't working on his new garage.

GRADUATE STUDENT HIGHLIGHT

David T. Johnston



For 2006, our graduate student highlight is **David T. Johnston**, who will graduate next January with a bedrock thesis on the geomicrobiology of sulfur isotopes, supporting what one may only predict as a stellar academic future.

David grew up in upstate New York, and as an avid skier and rock climber, he became curious about the rocks he was continually scrambling over. His fascinations with the natural world eventually lead him to environmental studies at Bates College where he studied with **Dr. Beverly Johnson**, an organic and isotope geochemist. Working on related projects in the laboratory, Dave became interested in how biology and environments interact, and “in the storytelling geochemists can do with an isotope record.”

Fortunate for us, Dr. Johnson was a post-doctoral fellow at the Carnegie Institution at the same time as **Assoc. Prof. James Farquhar**, who arrived at Maryland in 2001 and was looking for a bright student to help build his laboratory. Beverly introduced Dave to James at the 2001 Geological Society of America meeting in Boston, and the rest is history.

At Maryland, Dave learned the Zen of mass spectrometry from James and Boswell Wing and applied novel sulfur isotope techniques to his interests in biological systems. Dave traveled three times to Denmark to work at Southern Denmark University with **Dr. Don Canfield**, a famed geomicrobiologist.

There they cultured specific sulfur-loving bacteria and isolated the products of their metabolism – in order to use mass spectrometric techniques learned back at Maryland to better understand the cycling of sulfur in both modern and ancient environments.

James said, “Dave was part of my first group of students and post docs, and he had a big part in making it a positive, productive, and fun lab environment. His work has been exciting, but it hasn’t been easy.” He spent many marathon sessions in the lab, and a lot of time afterwards working to understand his data.

To date, this research has resulted in three first-authored published articles by Dave, including a landmark article in *Science*, as well as two other co-authored publications, and many other manuscripts in review or in preparation. “A lot of this reflects the freedom that I was given here at Maryland,” said Dave. “The faculty here is just fantastic, and they have always treated me like a colleague.”

Dave’s hard work has already won him much recognition across campus, and the world. He was awarded by the department for giving the best Ph.D. presentation in 2005. Furthermore, his research has been partially funded by NASA Astrobiological Institutes and the International School of Aquatic Sciences (SOAS) scholarships as well as a prestigious Dean’s dissertation fellowship. Dave has also received travel grants from SOAS and the Geochemical Society to attend various meetings, including the 16th annual V.M. Goldschmidt Conference in Melbourne, Australia last summer.

The future looks bright for Dave. He has already been offered post-doctoral research positions at two prestigious institutions, and with his momentum, other offers will certainly come to this exceptional scientist. We

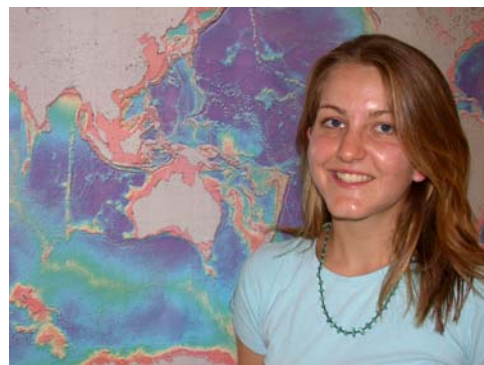
congratulate Dave, who has pushed the bar of graduate excellence at Maryland even higher, and wish him the very best in his future academic pursuits.

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UNDERGRADUATE STUDENT

HIGHLIGHT

Kate Burgy



Our undergraduate student highlight for 2006, **Kate Burgy**, figuratively galloped through her senior year – at home in Clarksville, Maryland with her stable of horses, and at work, winning the J.R. Dorfman Prize for Undergraduate Research. Her senior thesis project on the complicated structure of Mather Gorge at Great Falls of the Potomac with **Asst. Prof. Aaron Martin** had to be completed quickly as Dr. Martin left for Nepal in the middle of the spring semester. Although this reigned in her thesis time, it allowed her to finish quickly enough to meet the early Dorfman deadline.

This ultimate success blankets Kate’s interesting academic history. While she was always fascinated with rocks and earthquakes – and was destined to get a “hard science degree,” she transferred out of Geology midway through to major in Biology. However, after a year she clearly smelled the good hay and came back to the Geology stables, excelling in her senior year.

We are pleased that Kate has decided to saddle up for graduate school here at Maryland, and will start this spring working in Nepal with Dr. Martin. Besides Irish dancing and saltwater fly fishing, let’s hope she also likes Yak butter!

SENIOR THESIS PROGRAM

The Department of Geology senior thesis program, coordinated by *Prof. Phil Candela* for the past decade, turned 35 this year. Since 1972 there have been 487 completed senior theses advised by our faculty.

Faculty members that have advised the most students in this program include: *Ann Wylie* (59), *Peter Stifel* (55), *Galt Siegrist* (45), *Jerry Weidner* (32), *Bob Ridky* (31), *Phil Candela* (29), *Karen Prestegaard* (28), and *Tony Segovia* (27).

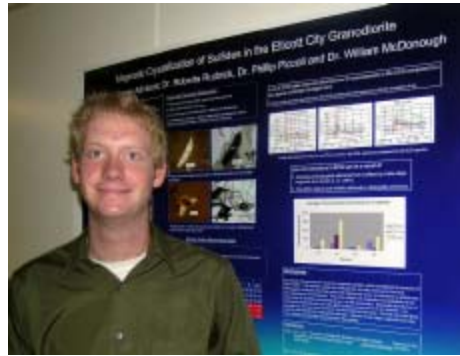
There was a crowd of excellent graduating seniors in 2006. Again this year, their final presentation included a poster session in the Geochemistry hallway. We wish each of our departing students, and newest alumni, the best of luck with their future endeavors.



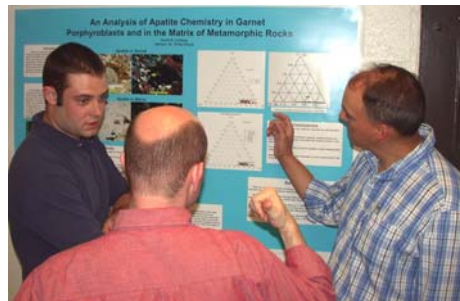
Dusty Aeiker (left), Deducing the depth of origin of granulite xenoliths from zircon-rutile thermometry: a case study from Tanzania (advisors *Rudnick, McDonough & Piccoli*)



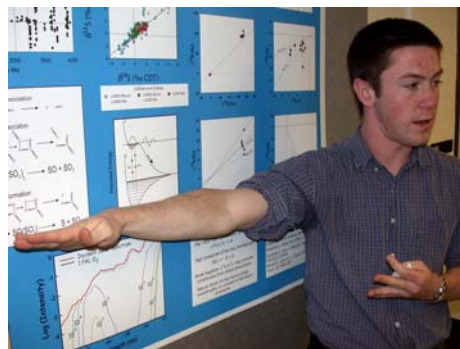
Kate Burgy, The Measurement of Small-Scale Structures to Determine Their Influence on the Orientation of the Mather Gorge of the Potomac River, Maryland and Virginia, USA (advisors *Martin & Zen*)



John James, Magmatic liquid crystallization of sulfides in the Ellicott City granodiorite: Implications on ore metals (advisors *Rudnick & Piccoli*)



David Limburg (left), An Analysis of Apatite Chemistry in Garnet Porphyroblasts and in the Matrix of Metamorphic Rocks (advisor *Piccoli*)



Andrew Masterson, Anomalous Fractionation Patterns of Multiple S-Isotopes in the Broadband UV Photolysis of He-SO₂ (advisors *Wing & Farquhar*)



Ashley McCleaf (left), Hydraulics Effecting Bedrock Erosion at a Stream Knickpoint (advisor *Prestegaard*)



Lynnette Pitcher (center), The Behavior of Rhenium and the Platinum Group Elements during Fractional Crystallization of the Kilauea Iki Lava Lake in Hawaii (advisors *Walker & Helz*)



Andrew Shansby (right), Comparison of the Petrology of Samples from Two Amphibolite Facies Localities from the Andrelandia Group, Brazil (advisors *Brown & Piccoli*)



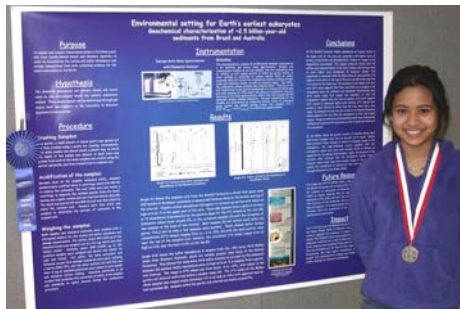
Brendan Williams (right), A Sulfur Isotopic Study of Neoproterozoic Evaporites in the Shaler Supergroup, Victoria Island, Northwest Territories, Canada (advisors *Kaufman & Johnston*)

* * *

To see the posters from this year's presentations and lists of theses over the past 35 years go to <http://www.geol.umd.edu/pages/undergraduates/SeniorThesis.htm>.

OUTREACH ACTIVITIES

Department of Geology faculty outreach to the local geological community spans the gamut of activities. For example, over the past several years **Bill McDonough**, **James Farquhar**, and **Jay Kaufman** have mentored high school students from Oxen Hill, Charles Flowers, Montgomery Blair and Eleanor Roosevelt high schools in the Geochemical Laboratories. This past year, **Aarisha Shrestha**, an intern working with **Prof. Kaufman**, was highly successful with her Science Fair project titled "Environmental Setting for Earth's Earliest Eukaryotes." She won first place in Earth/Environmental Sciences, and third overall in the Eleanor Roosevelt science fair. This allowed her to compete in the 58th Annual Prince Georges Area Science Fair where she won the Grand Prize competing against 158 other finalists.



Aarisha Shrestha, Eleanor Roosevelt HS senior with her Grand Prize poster from the Prince Georges County Science Fair.

Aarisha was then invited to present her work at a symposium in Texas and at the Intel International Science Fair in Indianapolis. She is currently a freshman at the University of Maryland.

Geology Department faculty similarly played key roles in the Geological Soci-

ety of Washington, the oldest society of its kind in the US. The GSW holds meetings with three 20 minute talks from local and regional geologists at the Cosmos Club in Dupont Circle about once a month. If you live in the region, please consider joining this supportive society (<http://www.gswweb.org>).



2006 GSW officers (l to r) Bill McDonough (Secretary), Rich Walker (President), Jay Kaufman (Program Chair)

HOW CAN YOU HELP US?

There's excitement at Maryland in Geology with our achievements in 2006. We're recruiting world-class faculty and talented students. We are exploring new frontiers at the edge of discovery. Our Faculty are receiving recognition for their achievements. We have one of the best Geochemistry Programs in the world. And we're all working together to become one of the top Geology Departments in the Nation.

But, we need your help to reach this goal! How can you help us?

In this tight economy, the support of alumni and friends like you is the key to our success and to maintaining our commitment to excellence. Whether you support us yourself or put us in contact with someone who can, your contribution is sincerely appreciated. Your tax-deductible donation will help us strengthen our program with faculty and student recruitment tools, state-of-the-art facilities, an enhanced fieldwork program for our undergraduates and innovative outreach programs.

A growing problem for our undergraduates is the transfer of the cost of Tertiary education from the State to the individual via reduced State support and increased tuition rates. The increased cost commonly increases the time it takes to complete the degree, and our ability to help is limited by a significant under-funding in scholarship support for students. In Geology, this is particularly important, since there are the additional costs associated with fieldwork, particularly Field Camp and research for the Senior Thesis, and additional financial help from the Department for those students in need commonly allows these students to succeed. Through the generous support of our alumni, faculty and friends, we were able to provide financial support to several students to assist with the costs of field camp in 2006. But we must do more.

Please consider strengthening your connection to the Department. I ask you to join with me and the faculty in supporting our students reach their goals. I invite you to join the College of Computer, Mathematical and Physical Sciences as members of the Dean's Circle (gift level >\$2,000) or the Newton Society (gift level >\$1,000). An envelope is enclosed, giving you a convenient opportunity to participate, right now, in the exciting and important work that our students and faculty are doing.

You can assist us to support future generations of Geology majors by earmarking your tax-deductible gift for Geology.

Your generous help allows us to provide grants to undergraduate students from the Fernow Field Fund to assist with the costs of Field Camp, and to award prizes for the Best Senior Thesis from the Stifel Undergraduate Research Fund and for the Best

(cont. on back cover)

2006 Department of Geology, University of Maryland



Front row (Faculty), left to right: Karen Prestegaard, Ann Wylie, Rich Walker, Nick Collins, Bill McDonough, James Farquhar, Phil Picolli, Andy Campbell, Igor Puchtel, Mike Brown, Aaron Martin, Phil Candela, Roberta Rudnick, Sarah Penniston-Dorland, Sash Heir-Majumder, John Merck, Jay Kaufman.

Second row along stairs (Graduate Students and Research Associates), left to right: Andy Masterson, Ryan Kerrigan, Kate Scheiderich, Rachel Potter, Kristin Miller, Erik Hankin, Zachary Blanchet, Tom Ireland, Adam Mansur, Melissa Wilmot, Rick Arevalo, Barry Reno, Jingao Liu, Kristina Brody, Chrisy France, Yan Chen, Lin Qiu, Katya Klochko, Nick Geboy, Michael Mengason, Tracey Centorbi, Tetsuya Yokoyama, Keiko Yokoyama, Todd Karwoski, Noah Miller

Back row (Staff), left to right: Dorothy Brown, Ginette Villeneuve, Jeanne Martin, Sandy Romeo, Rosalind Pinkard

Not shown (Faculty): Tom Holtz, E-An Zen, Luke Chang (emeritus), Pete Stifel (emeritus); (Research Associates): Sonja Aulbach, Ralf Halama, Fauna Korhonen; (Research Assistants): Richard Ash, Dan Earnest; (Graduate Students): Margaret Baker, Jeremy Bellucci, Pramod Doguparty, Heather Franz, Jenise Honesto, Adrian Hughes, David Johnston, Gwen Rhodes, Ruth Schulte, Brian Tattich

Graduate Student Presentations from the Chang Graduate Research Fund. The Hutton General Fund is used to address other needs in our drive for excellence in Education. In the future we aim to offer funded Summer Internships to undergraduate students.

Gifts to the Department of Geology also may be made directly to the Department by check or online (<http://www.geol.umd.edu/pages/contribute.htm>) using a credit card. Contributions to the Department of Geology by check should be made out to the University of Maryland College Park Foundation with "Geology" in the memo. To ensure that Geology is the receiver of your gift to the University of Maryland, please be careful when completing the Online Gift Form. On line two, please scroll down to "Other: Specify the gift designation in the following field", and on the third line in response to the question "Specify "Other" Fund or School/College" insert "Geology". If you do not change these items, Geology will not receive your gift.

I want to thank those of you who responded last year, and on behalf of the Department, offer my thanks, in advance, for your early and positive response to this request for your help this year.

Michael Brown