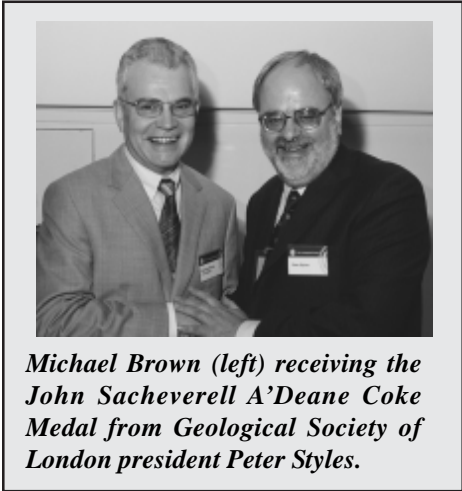


Earth System Science Interdisciplinary Center, was promoted to Associate Professor with Tenure, **Bill McDonough** was promoted to Professor, and **Tom Holtz** was promoted to Senior Lecturer. Additionally, we promoted **Boswell Wing** to Assistant Research Scientist, and we welcome **George Helz** (Department of Chemistry and Biochemistry) and **Dan Lathrop** (Department of Physics) as Affiliate Faculty to broaden our base in Environmental Geochemistry and Geophysics, respectively.

LETTER FROM THE CHAIR



Michael Brown (left) receiving the John Sacheverell A'Deane Coke Medal from Geological Society of London president Peter Styles.

to starting as Assistant Professor in 2006. Sash will continue the second year of a Post-Doctoral Fellowship at Yale University before taking up his position as Assistant Professor in 2006. Furthermore, we anticipate making an additional faculty appointment during the coming year.

2004-2005 – A VERY BUSY YEAR!

In my letter last year, I referred to our search for new faculty. I am very pleased to report that we secured four excellent new faculty in a strongly competitive hiring environment. We welcome **Sarah Penniston-Dorland** as Professor in Mineralogy and Petrology (from July 1, 2007), **Andrew Campbell** as Professor in Mineral Physics, **Aaron Martin** as Professor in Structural Geology and Tectonics (from July 1, 2006), and **Saswata (Sash) Hier-Majumder** as Professor in Geophysics (from July 1, 2006).

Andy comes to us from the University of Chicago, but he is familiar with the Washington-Baltimore Metropolitan area, having spent post-doctoral time at the Geophysical Laboratory. Sarah finished her Ph.D. at Johns Hopkins University in the Fall Semester last year and will teach Optical Mineralogy during a two-year Post-Doctoral Fellowship prior to starting as Assistant Professor in 2007, and Aaron will teach Structural Geology during a one-year Post-Doctoral Fellowship prior

Yes, last year was a very busy year, with more than a dozen interviews and frequent meetings with the Dean to secure the necessary resources and space to support the cutting-edge research that our new faculty will undertake. **Andy Campbell** is located in the Geology Building with the two Phils (**Candela** and **Piccoli**), and they will be joined by **Karen Prestegaard**, who is transferring her office and laboratory from the Chemistry Building to enable expansion of the facilities in Geochemistry. Sash will be located in the Computer and Space Sciences Building with me, and Aaron and Sarah will be located on the first floor of the Chemistry Building, in renovated space immediately above our present Geochemistry Facility, which will be extended to double the size of the Chemistry Clean Laboratory Facility and improve Rock Crushing and Mineral Separation Facilities. You may read about the exciting research the faculty will lead and the opportunities it will create for undergraduate and graduate students elsewhere in this GeoGram.

“This year I am very pleased to report that we secured four excellent new faculty in a strongly competitive hiring environment.”

Staying with the faculty theme, it is a pleasure to report that **James Farquhar**, a joint appointment with the



Rich Walker (center) receiving the first CMPS Board of Visitors Distinguished Faculty Award with Dean Steve Halperin (right) and Alan H. Harbitter, Chair, Board of Visitors

As I explained last year, **Dazhi Jiang** moved back to Canada at the end of 2004, to the University of Western Ontario, where we wish him every success. Also in December **Luke Chang** retired from the teaching faculty, becoming an Emeritus Professor, after 25 years at Maryland. What can I say? Luke was the first Professor of Geology and Chair of Department – he built the Graduate Program and the Department during the 1980s, providing the high-quality foundation upon which we have been able to develop our strength in Geochemistry during the past fifteen years. Of course, we can all see where the Department is now – but what ambitions did Luke have 25 years ago? On page 3 of this GeoGram we have reproduced an article from **precis**, the former Faculty/Staff Newsletter of the University of Maryland, College Park Campus, from 1981 that provides an

answer, and the present informal ranking of our Geochemistry Group as among the best in the Nation represents a fitting tribute to Luke's vision and drive more than two decades ago.

It is a pleasure to report that our Faculty are increasingly recognized for their contributions and accomplishments in various ways. **Rich Walker** was listed by the Institute for Scientific Information as a "Highly-Cited Researcher" in Geosciences (1 of 295) and received the first College of Computer, Mathematical and Physical Sciences Board of Visitors Distinguished Faculty Award. **James Farquhar**, ESSIC and Geology, was given a Graduate Research Board Semester Award for Fall 2005 and also received a prestigious Hanse-Wissenschaftskolleg Oceanography and Climate Research Fellowship for the first half of 2006. He will work with research groups at the Max Planck Institute for Marine Microbiology, the Institut für Chemie und Biologie des Meeres at the University of Oldenburg, and the International University Bremen; James will be in Germany during the 2005-2006 Academic Year. **Roberta Rudnick** gave the Inngerson Lecture on "Geochemical probing of continental dynamics" at the Annual Meeting of the Geological Society of America in 2004, and she was elected Fellow of the American Geophysical Society in 2005. The Institute for Scientific Information interviewed **Bill McDonough** about his highly-cited paper "The composition of the Earth" (McDonough, W.F. and Sun, S.S., *Chem. Geol.*, **120**, 223-253, 1995), which is among the 10 most-cited papers in the Geosciences field over the past decade with more than 700 cites to date.

At the College Academic Festival, **Tom Holtz** received the College of Computer, Mathematical and Physical Sciences Dean's Outstanding Instructor Award, which means that this department has won that award for the past two years! Good fortune touched

me also, with the award of the John Sacheverell A'Deane Coke Medal for 2005, by the Geological Society of London; you may read the citation on page 11 of this GeoGram. Our faculty also continue to contribute as sponsors of Special Sessions and Invited Speakers at major conferences, both national and international, but the number is simply too large to list the details here!



Tom Holtz (center) receiving the CMPS Dean's Outstanding Instructor Award for 2005 with Michael Brown (left) and Dean Steve Halperin.

We welcome a number of new scientists to the Department this year – the lifeblood of any academic group. **In Sung Lee** is a sabbatical visitor for 2004-2005 from the Seoul National University; and **Tetsuya Yokoyama**, from Japan, and **Sonja Aulbach** and **Ralf Halama**, from Germany, will be with us for the next two years as Post-doctoral Research Associates. **Julia Baldwin** completed two years as a Post-doctoral Research Associate in July and moved to an Assistant Professorship at the University of Montana in August, and **Boz Wing** will take up an Assistant Professorship at McGill University in Montreal, Canada in January of 2006 [see **SOME ALUMNI IN ACADEMIA** on pages 5, 10-11]. The Department continues to enjoy short visits from numerous faculty and students, both National and International, some of whom are research collaborators and other of whom are simply using our state-of-the-art facilities in Geochemistry.

On the staff side I regret that I must report the unfortunate death of two staff, **Mike Harman** from the Earth Sciences Business Services and **Saroj Bhandari** from our sister unit, the Earth System Science Interdisciplinary Center. These two losses in quick succession during the Spring Semester were unexpected and quite devastating, and we extend our sympathy to the families of both colleagues. We welcome **Gloria Spindler** in the Earth Science Business Services.

Our students continue to excel. It was a personal pleasure to celebrate the success of our 2005 Geology Distinguished Alumnus, **Guillermo (Willy) Accame**, at the College Academic Festival last April, and a brief summary of some of Willy's accomplishments is given in the **DISTINGUISHED ALUMNUS** section on page 4 of the GeoGram. **Allison Gale** and **Paula Zelanko** received Mineralogical Society of America *American Mineralogist* Undergraduate Awards for excellence in Mineralogy, and **Andy Masterson** received a scholarship from the Gem, Lapidary & Mineral Society of Washington, D.C.

Once again we hosted a fieldtrip to the Museum and Geochemistry Laboratories for members of the Gem, Lapidary & Mineral Society of Washington, D.C. as part of Maryland Day in April. If you live locally, please visit us during the last Saturday in April next year – we will be hosting visitors in the Gems and Minerals Museum in the Geology Building by the Circle and we will be pleased to hear from you about your successes. Let me finish with a thank you to all of our alumni and friends who have contributed so generously with gifts to help support our programs and to assist our students in achieving success.

Michael Brown

October 2005

Building a Graduate Geology Program: a Challenge for Luke Chang



by Stephanie Bobrowsky

Luke Chang is a man with one mission uppermost in his mind.

As the newly appointed chairman of the University's Department of Geology, the Chinese native is faced with the potentially humbling challenge of building the department's graduate program from ground zero.

Stiff competition: The obstacles that confront him might easily intimidate a less seasoned administrator: the competition for life-giving research dollars has never before been so fierce, and currently Maryland is the only major state institution that does not boast a fullfledged geology department. In Chang's own estimation the "University must come from behind to compete successfully with prestigious graduate programs established 100 years ago."

Yet Chang is optimistic that the department he heads cannot only come from behind, but in the long run can compete on an equal footing with some of the nation's oldest and most highly regarded graduate geology programs.

If his previous track record as director of the geology graduate program at Ohio's Miami University is any indication, then Chang will indeed realize his ambitions for UMCP.

Chang's arrival at Miami University 11

years ago coincided almost exactly with the administration's first attempts to implement a geology Ph.D. program. Keenly aware of the growth opportunity that awaited the department, Chang pressed for active recruiting, increased funding, and expanded research efforts. Chosen by Miami students as one of the 10 most outstanding professors on campus, Chang secured the establishment of the program which today attracts high calibre graduate students from across the country.

Fall '82 target: Here at College Park Chang plans to follow an administrative track very similar to the one he first charted at Miami. The game plan? A slow, methodical building up of the new graduate program, says Chang, so that quality is assured and the faculty will still be able to devote adequate time and attention to the department's 170 plus undergraduates. Implementation of the program is slated for late fall of 1982, with a targeted enrollment of five to ten graduate students by 1983 and an eventual enrollment of some 25 students.

First on Chang's growing agenda is the hiring of a new faculty member, preferably one whose expertise is linked to marine biology. Explains Chang: "The proximity of the University to the Chesapeake Bay is a remarkable asset from a geological perspective. As yet, however, it has remained largely an untapped asset."

Broadened energy interests: In addition, Chang is working in close cooperation with the department's current team of 9 faculty members—a team he depicts as "dynamic, cooperative, and ready for change." Specifically, he is encouraging them to broaden their research interests and to tackle geological problems related to exploiting energy and mineral resources. The rationale behind Chang's prodding is easily surmised. Says Chang: "Industry is desperate for well trained geologists who can provide the brainpower to fuel America's search for cheap and abundant energy. A university strong in energy-related research will as a matter of course attract good students."

Beyond enlarging the scope of faculty pursuits, what departmental strengths will give Maryland the competitive edge in the nationwide scramble for qualified students?

According to Chang, one of the geology department's strongest suits is the extensive equipment available to both faculty and graduate students. "The 'tools' we on campus have at our disposal are in good working order and compare favorably with the equipment of other geology departments which already boast graduate programs," notes the understandably enthusiastic department head. "We can subject rocks and minerals to extremely high temperatures and pressures, thereby simulating in the laboratory conditions that exist on earth."

Research resources: The University's own equipment notwithstanding, future geology graduate students will also be able to take advantage of the many research facilities headquartered in metropolitan Washington and Baltimore.

"From the National Geological Survey to the Bureau of Standards to the United States Bureau of Mines, this area is rich with research and work opportunities that could very easily be exploited by enterprising graduate students," asserts Chang.

With a long list of publications to his credit, the 46-year-old Chang has emerged as a recognized authority on sulfosalt mineralogy—an expert who knows full well the value of exploiting academic opportunities. Graduated in 1963 with a Ph.D. in geophysical sciences from the University of Chicago, his career has brought him in touch with a diverse assortment of top-ranking geology programs. All of those programs, claims Chang, are united by certain common characteristics: innovative faculty, up-to-date equipment, and administrative support.

"These elements exist here," stresses Chang. "With patience, perseverance, and of course hard work, I am confident that the graduate program we build will be a credit to the University."

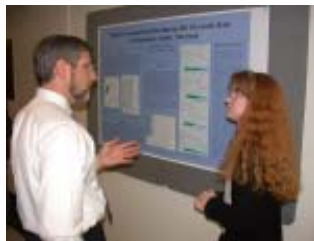
Plaudits to Geology Undergrads: UMCP undergraduate geology students created quite a stir this summer at the annual American Assn. of Petroleum Geologists meeting. They captured the top three prizes for undergraduate student research papers in the organization's Student Paper Contest.

SENIOR THESIS PROGRAM

The Senior Thesis program was initiated by *Peter Stifel* and coordinated by him for over 20 years when the honor was passed on to *Phil Candela*. All senior theses are kept in the permanent collection of the Geology Department. Lists of past senior theses and links to more recent projects can be found at:

<http://www.geol.umd.edu/pages/undergraduates/SeniorThesis.htm>

In 2005 we had only a small number of graduating seniors (but just wait until next year!)



Jennifer Harvey: Magnetic survey of ultramafic rocks, Montgomery County, MD (advisor *Phil Candela*)



Paula Zelanko: What's for dinner? An isotopic analysis of Pleistocene mammals of the American Southeast (advisors *Tom Holtz*, *A. Jay Kaufman*, and Ph.D. candidate *Christine France*)

* * *

DISTINGUISHED ALUMNUS

The 2005 Geology Distinguished Alumnus was *Guillermo (Willy) Accame*. Willy graduated from the University with a B.S. in 1980. His senior thesis advisor was *Ann Wylie*, and his research involved a "Preliminary evaluation of Maryland groundwater for asbestos". While at Maryland, Willy co-founded the Student Chapter of the American Institute of Professional Geologists and the Undergraduate Geology Club, and he served as the undergraduate representative to the Search Committee that recommended *Luke Chang* be appointed as the first Chair.

After graduation, Willy was granted a research fellowship at Purdue University, where he completed a double Masters in Geochemistry and Remote Sensing in 1983. While at Purdue, Willy participated in a joint project with the JPL for the design of one of the first geographic information systems to be developed (GIS), integrating rectified digital satellite imagery to create a base map for Bolivia; he also conducted research into the origin of the California diamond deposits, which are secondary alluvial (river) deposits, using sediment chemistry and remote sensing to reconstruct the source of the paleochannels in the Sierra Nevada. Willy's MS thesis was "Mineralogical, trace-element, and LANDSAT multispectral

evaluation of gossans in the Alma Mining District, Colorado."

Willy has subsequently followed a most fascinating career. After graduating from Purdue, he continued working in diamond exploration throughout the US, and he was on the team that contributed to the discovery of the Wyoming-Colorado State-Line diamond deposits. However, in the mid-1980s Willy turned his attention to the development of a technique using color-infrared aerial photography and GIS technology for the mapping of wetlands. He applied this technology to the inventory and mapping of all non-tidal wetlands in NJ.

In 1992, Willy joined Environmental Strategies Consulting and focused on the



Guillermo (Willy) Accame (center) receiving the 2005 Distinguished Alumnus Award at the CMPS Academic Festival with newly-minted Professor William McDonough (right) and Chair Michael Brown.

investigation and remediation of contaminated industrial properties. He negotiated the first mixed-funding Superfund Removal Action in NJ, involving the excavation and disposal of over 6,000 buried drums, and negotiated the first Resource Conservation and Recovery Act Voluntary Corrective Action at an industrial facility in the NJ-NY region.

In 1999, Willy established a Denver office for Environmental Strategies Consulting and in Denver developed a web-based information management practice; in 2000 he participated in the technical legal defense team for the Summitville mine in Colorado, one of the biggest mine environmental legacies in the US. In 2003, Willy was elected to the Board of Directors of Quanta Indemnity Company, a specialty lines insurance company that provided the technical underwriting for Denver International Airport, and the parent company of Environmental Strategies Consulting, where Willy is a Partner and General Manager of the Denver office.

In addition to the usual range of outside activities common to many Geology graduates, Willy is a Martial Arts expert – holding Black Belts in Tae Kwon Do and Kenpo, and trained in Ninjutsu, Kung Fu, Shorin-Ru and Tai Chi Chuan; he teaches at a martial arts school in Denver.

SOME ALUMNI IN ACADEMIA

The Geology Department at the University of Maryland has only had a graduate program since 1982 by which time the department comprised 10.5 full-time equivalent faculty. Since that time a number of our graduates and research scientists have moved on to academic positions at different colleges and universities across the country and the world. In this year's issue of the GeoGram we highlight some of our Alumni in Academia.

Carmela Garzione (B.S., 1994)



University of Rochester, Rochester, NY
Assistant Professor (Sedimentation and Tectonics)

My primary research interests are in the evolution of sedimentary basins and related orogenic systems. A recent focus of my studies has been on the uplift history of the southern Tibetan Plateau as recorded in the sedimentary fill of extensional basins in the southern plateau region. In the field, I focus on reconstructing paleogeography from provenance, facies, and paleocurrent information to understand paleodrainage patterns and basin development. I also employ oxygen and carbon isotopes as indicators of paleoelevation and paleoenvironment.

* * *

Kent Ratajeski (M.S., 1995)



University of West Georgia, Carrollton, GA, Assistant Professor (Petrology)

My academic background is in igneous petrology, and most of my research has concerned the petrology of granites in some way or another, and geoscience education. I have taught a number of undergraduate geology courses as a visiting assistant professor at several colleges and universities since finishing grad school in 1999, and now have a permanent job in Georgia. My teaching experiences have been firsthand learning experiences in geoscience education, and I am excited to be focusing on new aspects of geoscience education at West Georgia.

* * *

Paul Tomascak (Ph.D., 1995)



State University of New York at Oswego, Oswego, NY, Assistant Professor (Geochemistry)

My research interests are mainly in the application of geochemical tools to solving geological problems. At present my studies revolve around geochronology and the investigation of natural variations in stable lithium isotopes. In the last several years I developed techniques for the isolation and measurement of these isotopes, primarily in mantle rocks. Nowadays I am focusing more on the untapped potential of Li isotopes to shed light on crustal processes, including magmatic/hydrothermal evolution, metamorphic and metasomatic fluid flow, and weathering and hydrologic records in lake sediments.

* * *

Adam Simon (B.S., 1995; Ph.D., 2003)



University of Nevada at Las Vegas, Las Vegas, NV, Assistant Professor (Economic Geology)

My research elucidates the physical and chemical processes responsible for the mass redistribution of metals (e.g., copper, gold) among solids, aqueous fluids and silicate and sulfide melts, in systems ranging from shallow-level, degassing magma chambers to the dehydration of subducting slabs to acid mine drainage in the near-surface environment. I use experimental and micro-analytical techniques to gather data as a function temperature, pressure, oxygen and sulfur fugacities and acidity of the aqueous phase(s). These data are then used to build forward (numerical) models of magmatic-hydrothermal system evolution and, ultimately, to better our understanding of why and where metal anomalies occur in Earth's crust.

* * *

Mark Frank (M.S., 1996; Ph.D., 2001)



Northern Illinois University, DeKalb, IL
Assistant Professor (Experimental Geochemistry)

My general research activities focus on understanding the physical and chemical principles that determine mineral stability in the interior of the Earth. This goal is achieved through characterizing, by experimentation and the theory of mineral physics, equilibrium and the kinetics of mineral-melt-fluid systems in the Earth's crust. My research program is grounded in the use of diamond anvil cell assemblies, cold-seal and one-atmosphere furnaces to collect data relevant to pressing geologic questions. Subsequent thermodynamic models provide a means of applying experimental data to ancient and present geologic processes.

MEET THE NEW FACULTY

Andy Campbell, Assistant Professor (Ph.D. University of Chicago, 1993)



My research focusses on the physics and chemistry of minerals, applied to problems in cosmochemistry and planetary geochemistry. I have had a particular interest in metallic systems, spanning their chemical evolution in dust and protoplanetary bodies during the early stages of solar system formation to the properties of iron-rich compounds in the Earth's core. Having recently arrived at Maryland, I am now establishing a high-pressure laboratory for mineral physics studies.

Some of my current and recent research areas include: 1) phase diagram studies in iron-rich systems at pressures and temperatures approaching those of the Earth's core; 2) equations of state of minerals and other geochemically important materials at high pressure and temperature; 3) elemental partitioning in partially molten metallic systems, including both experimental studies and analysis of iron meteorites, which sample the metallic cores of small planetary bodies; and 4) microanalytical trace element studies of primitive chondrite components, to unravel early solar system processing of these materials.

* * *

<http://www.geol.umd.edu/~ajc/>

Saswata (Sash) Hier-Majumder, Post doctoral Fellow (Assistant Professor from July 1, 2006) (Ph.D. University of Minnesota, 2005)



My area of research is solid earth geophysics. Currently, I am studying the transport of melts and fluids in planetary interiors. In the Earth's deep interior, melts and volatiles travel through viscous mantle rocks by a network of micron sized channels along grain boundaries. The geometry of the network formed by these channels controls the direction of transport and the geochemical signature of the melt or fluid. I am interested in understanding the coupling between the structure of these small scale channels and convective motion of the mantle. For example, I am currently investigating the way corner flow in the mantle wedge above subduction zones influences the transport of slab derived water back to the surface via arc volcanism.

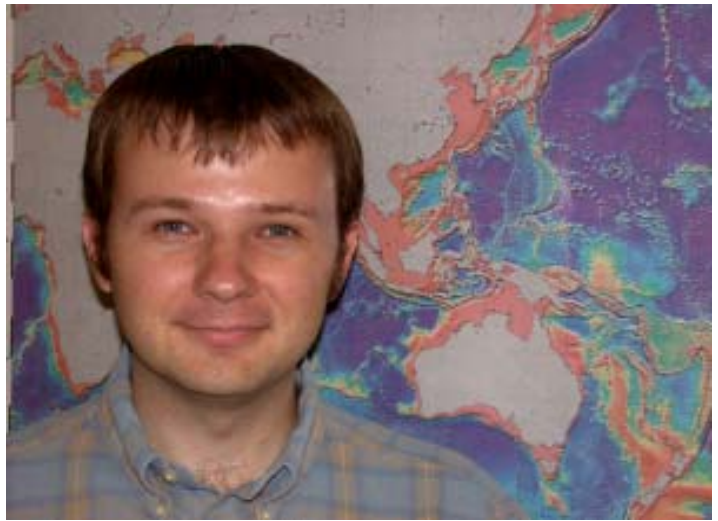
Another area of my active research involves investigating the physical properties of mantle materials. Chemical environment exerts an extremely strong influence on the physical properties of minerals. For example, the viscosity of silicate minerals can be reduced by orders of magnitude with the addition of a few parts per million of protons. As a consequence, the physical properties of minerals in the Earth's mantle are heterogeneously distributed based on the location of volatiles. For example, the variation in water content in the mantle rocks can give rise to regions of shear localization.

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<http://www.geol.umd.edu/pages/faculty/MAJUMDER/majumder.html>

Sarah Penniston-Dorland, Post doctoral Fellow (Assistant Professor from July 1, 2007)(Ph.D. Johns Hopkins University, 2004)

Aaron Martin, Post doctoral Fellow (Assistant Professor from July 1, 2006)(Ph.D. University of Arizona, 2005)



My studies involve deciphering fluid-rock interactions in a variety of different settings. I initially worked on veins and associated alteration in a porphyry copper ore deposit from Grasberg, in Irian Jaya Indonesia. These studies spread out to the exploration of halogen (fluorine and chlorine) contents of apatite in five different contact metamorphic aureoles around the world. I have also studied biotite in siliceous carbonate rocks that were the roots (~26 km deep) of the Acadian orogeny in Vermont. Biotite in these rocks was the mineralogical product of reactions that were driven by infiltration of fluids during regional metamorphism, and I used the spatial distribution of biotite along with stable oxygen isotopes and determination of fluid composition (carbon dioxide content of the fluid) in order to try to constrain the flow pattern of these fluids.

This fall I am starting new projects in areas that continue to focus on fluid-rock interactions in still different geologic settings, including subduction zones, blueschists and eclogites using the electron microprobe and lithium isotopes to try to learn about the release of fluids from the subducting slab. Lastly, I have begun a new project based on sulfur isotope measurements of sulfide minerals in the South African Bushveld ultramafic complex to investigate the extent to which interaction between the magma and the country rock contributed to sulfide mineralization.

* * *

<http://www.geol.umd.edu/~sarahpd/>

I study the evolution of the lithosphere, especially its deformation, and interactions between the hydrosphere, lithosphere, and asthenosphere. I currently undertake these studies in two geographic areas: the Himalaya and the western United States. Over the next few years I plan to become involved in research in the Appalachians as well.

In the Himalaya, I am testing kinematic and dynamic models for the tectonic development of the thrust belt. This effort involves descriptive structural analysis in the field integrated with laboratory techniques such as microstructural analysis, terrane identification by geochemistry, thermobarometry, and radiometric dating. I plan to expand the scope of my work in the Himalaya to include approaches such as analysis by GPS, low temperature thermochronology, and cosmogenic dating. My work is focused in Nepal, located in the central part of the orogen.

In the western United States, I am refining models for the evolution of Cenozoic extension in southern Arizona. As in the Himalaya, my work in Arizona entails integration of field- and laboratory-based data. Field data are principally geologic maps and measured stratigraphic sections, and laboratory data include radiometric dates and balanced cross-sections.

* * *

<http://www.geol.umd.edu/pages/faculty/MARTIN/martin.html>

DEPARTMENT HIGHLIGHTS

FACULTY HIGHLIGHT

Ann G. Wylie

**Professor of Geology and
Distinguished Scholar Teacher**

For the alumni of the Geology Department there is no more luminous beacon back to campus than *Ann Wylie*. While Ann's guidance and impact on undergraduate and graduate students in the department is legendary, her sphere of influence has extended beyond Geology's walls to encompass the entire university. Through her thirty three years of dedicated service to the department, college, and university Ann has been advanced through the administration and now reigns as the Assistant President and Chief of Staff of the University of Maryland. She is also currently the Interim Dean of the Graduate School.

So one might wonder what drove Ann Wylie to these academic heights?

Ann grew up amid the oil derricks of Midland, Texas near the geographic center of the Permian Basin, which notably contains more than 20% of the nation's petroleum reserves. Perhaps this is why she tried to get a job with Humble Oil (now Exxon) while studying geology in the mid 1960s at Wellesley College in Massachusetts. In a particular watershed moment during an interview with a Texas oilman, Wylie recounts that he matter-of-factly said, "We don't hire women, they just get pregnant and quit." For someone who always wanted a big family, and a career, these were words that would influence Ann forevermore.

Wylie graduated from circle pins and pearls at Wellesley College in 1966, and entered graduate school at Columbia University in New York City where — influenced by rock-and-roll and the societal turmoil of the Vietnam War — she grew her hair long and began playing



the guitar. At Columbia Ann worked with advisors James Rainwater and Peter Ypma on a laboratory-based thesis that included the determination of the index of refraction of isotropic opaque ore minerals [isotropic minerals, like galena and sphalerite, are those that have the same chemical bonds and other properties in all directions]. While admittedly esoteric, the mining-related thesis provided Ann with a toolkit that had many practical applications, including the characterization of asbestos.

Armed with a single microscope and a new faculty position at the University of Maryland in 1972, Ann began to study a wide range of asbestiform minerals. While some of these minerals had recently been identified as significant carcinogens, all had been grouped by OSHA as "asbestos" based solely on their fibrous texture. "We had a big problem," said Wylie, "At the time there were no adequate definitions of fibrous minerals." Over the following two decades using her microscope, as well as electron probe analyses and TEM observations on thousands of samples, Ann developed quantitative methodologies to tell the asbestiform minerals apart. Her research over this period resulted in more than 50 publications. Very significantly, Ann's

research was instrumental in the 1993 overturn of the OSHA regulations that had previously lumped all the fibrous forms together, regardless of their potential as a cancer causing agents.

More recently, Wylie has teamed up with *Phil Candela*, *Mark Frank* (now at Northern Illinois University – see **SOME ALUMNI IN ACADEMIA**), *Dan Earnest*, and graduate students *Courtney Crummett* and *Leah Englander* with funding from major U.S. automobile manufacturers to investigate the thermal decomposition of chrysotile, the white serpentine asbestiform mineral used heavily in this country for insulation, as well as brake pads in cars. Using the Advance Photon Source at the Department of Energy's Argonne National Laboratory, Wylie was able to use the most powerful and brilliant x-ray beams available in the world to study the decomposition of chrysotile in real time. She said, "Using the APS we heated up chrysotile fibers and watched them pop like popcorn" in the rapid thermal transition to simple forsterite and enstatite. The use of this powerful new technology to watch real time phase transitions "was absolutely mind boggling," Wylie remarked. "Its like I've been working in a garage all my life."

Ann's initial appointment at Maryland was in the Agronomy Department of the College of Agriculture, but when Geology became a formal program in 1973 she joined with **Peter Stifel, Tony Segovia, Galt Segrist, Robert Ridky** and **Jerry Widener** to form the core of the new unit. At the time there were few women faculty on campus. "I was in a man's world here at the University of Maryland," Wylie said, "but they were always good to me, and I refused to have a chip on my shoulder." Furthermore, Ann, who in 1971 married John Wylie (a medical student from New York who chose psychiatry as a career), did get pregnant – four times, in fact – and did not quit. Nor did Wylie ever miss a class during her pregnancies. "It is not for everyone," Ann said. "You have to be willing to compromise with your friends, family, and colleagues."



In addition to raising her four talented children, guiding hundreds of geology students through their degrees and their senior thesis projects, teaching, and research, Wylie has been a mainstay of campus committees. "I've participated all of my professional career on committees as a female in physical sciences, and I have enjoyed it," said Wylie. Her membership in these has honed her firm beliefs in the ways that the university should be run, and improved. Now as Assistant President and Chief of Staff since 2001 she is in a position to make things happen.

Over the past five years, Wylie (largely working behind the scenes when **President Dan Mote** takes the stage)

has been instrumental in the rapid growth and stature of the university, and sees a bright future ahead. "This university has the chance to be of the quality and stature of [University of California] Berkeley," she said. "What keeps us down is money." State funding for students here is \$3600 per student less than at the major public institutions in California, Illinois, and Michigan. By comparison this university is under funded by \$112 million dollars each year. "It appears the state does not uniformly believe that students deserve a top quality education," she said.

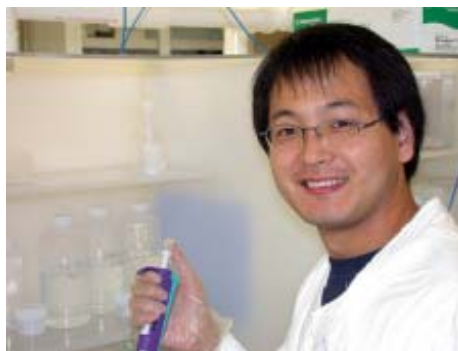
"In the past, we have not cultivated alumni giving," Wylie said. Now that state funding is down by nearly 30% we need our alumni – who have greatly benefited from their University of Maryland educations – to come through in the future.

While the financial waters appear choppy, we can be assured that with the determination and focus that **Ann Wylie** and **Dan Mote** provide for us at the helm of our flagship institution, the university will continue to move smoothly forward to higher and higher academic levels.

* * *

GRADUATE STUDENT HIGHLIGHT

Fangzhen Teng



The graduate student highlight for 2005 is **Fangzhen Teng** who defended his excellent Ph.D. thesis on lithium isotopes in early November – after a remarkably short four and a half year residence at the University of Maryland. His ascent to this pinnacle of success stands out at a time that a four year

Ph.D. degree seems unattainable. And he started with virtually no knowledge of either the instrumentation or the systematics of lithium isotopes (not to mention a major cultural and language shift) when he first arrived at the Geochemical Laboratories (<http://www.geol.umd.edu/pages/facilities/gl.htm>) with only a bachelors degree from China in hand. He said, "When I came here, I knew nothing about lithium."

Fangzhen had been working on the ultra-high pressure rocks of Dabie Shan in China with his advisor Shuguang Li (who knew nothing of lithium either), but he did know of **Bill McDonough, Roberta Rudnick, and Rich Walker**. Li urged Fangzhen to apply for graduate school to the University of Maryland just as the new *Plasma laboratory* was becoming established. "They gave me the great freedom to choose a topic of interest to develop with these new tools," said Fangzhen.

"Lithium is interesting," Teng said, because its concentration varies greatly throughout the Earth and the range in natural ⁷Li/⁶Li isotopic compositions is large. Therefore one can use Li isotopes to trace crust-mantle interactions on geological time scales. He admits, however, that even after all his efforts, we still know relatively little about the behavior of lithium nature. To date Fangzhen has a well-cited article in *Geochimica Cosmochimica Acta* and two currently in review. In addition, he has 2 more papers in the final stages of preparation for submission. Thus with this level of research success Fangzhen has set the bar quite high for other Ph.D. students; stay tuned for future grad student highlights others are well positioned to accomplish this and more in their program. Nonetheless, the immersion into English and the US culture took some getting use to for Fangzhen. "The first paper was definitely most difficult since my English was not so good, and it took me almost one year to write," Teng said. "I think I am getting better now."

While toiling away in the clean lab and at the ICP-MS, Fangzhen also found time to have a social life. He met his wife, Jianying Wang, a Ph.D. candidate in sociology at Yale University, on an unexpected hiking trip to the Shennandoah National Park.

The soon to be Dr. Teng is thinking about following up his success with lithium isotopes by developing techniques for other non-traditional stable isotope systems, including iron, molybdenum, and chlorine. He has invitations to talk at University of Chicago and Rice University and different research groups, including University of Chicago, Rice, the University of Wisconsin and of Illinois, and Arizona State University, are looking to hire the talented Teng as a Post-doctoral Fellow.

We all wish Fangzhen well in his future studies. His short stay here left a long shadow. Following his defense Ph.D. candidates were heard to mutter, "Now we have to publish at least five papers from our dissertations, and do it in a foreign language!" * * *

UNDERGRADUATE STUDENT HIGHLIGHTS

Dusty Aeiker



If you see a blond woman with a bright smile running around the ICP-MS laboratory in the Geochemistry hallway, or around campus, there is a good possibility it is this year's undergraduate highlight **Dusty Aeiker**. Dusty has stood out over the past year as the student whose tests are used to compare against

all others in her junior and senior level classes.

After taking Introductory Geology with **John Merck**, she was hooked into geology as a major. Then when she heard that **Luke Chang** hated field work, she knew this was a possible career path. "I love being in the laboratory, but I just hate being dirty," said Dusty. While this may seem strange given her name, Dusty has begrudgingly bought boots for department field trips and field camp this coming summer. Even sooner, Aeiker will be joining **Roberta Rudnick** in Tanzania over the winter break where she will collect more samples for her senior thesis project on zircon-rutile thermometry in granulite facies eclogites from the Mozambique Fold Belt.

"I like Geology because it integrates math, chemistry, physics and biology," said Aeiker. "I'd be bored with just one." After finishing her degree at Maryland, Dusty plans on attending graduate school in geochemistry, and eventually teaching. Knowing that she will succeed, we all look forward to the day that she is highlighted in our **SOME ALUMNI IN ACADEMIA** section of the GeoGram.

Andrew Masterson



Like Dusty, our second **UNDERGRADUATE STUDENT HIGHLIGHT** for the year is **Andrew Masterson** likes to run. But since he could not keep up with his twin sister who is a star at William & Mary, he instead devoted his energies to a double major in Geology and Biochemistry. He is also two classes shy of a degree in Microbiology, and has a minor in Spanish.

Early in life Andy heard a speech by Robert Ballard at the Naval Academy, and when he learned that this hero had completed a double major (in geology and ocean chemistry) the bar was also set for him. While he started as an electrical engineering major, Andy soon became fascinated with organic chemistry. "It is the entire basis of all life," Masterson said. "It sounds dorky, but I love writing down organic chemicals and reactions."

Because of his demonstrated academic excellence, Masterson has been awarded a Presidential Scholarship, a Senatorial Scholarship from the State of Maryland, a National Merit Scholarship, and a scholarship from the Washington Gemological, Mineralogical, and Lapidary Society.

Andy also loves to garden, cook, and build homes for the campus chapter of **Habitat for Humanity** (he sounds like the perfect wife). At present, he is working in **James Farquhar** and **Boswell Wing**'s stable isotope laboratory where he is investigating for his senior thesis, the effect of helium carrier gas on mass-independent fractionation of sulfur isotopes during photolysis of SO₂.

Upon completion of his myriad of undergraduate degrees, Masterson plans on completing advanced degrees in Geomicrobiology, Biogeochemistry, or Chemical Engineering. We applaud this remarkable overachiever, and fully expect to see him highlighted again in future issues.

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SOME ALUMNI IN ACADEMIA (CONT. FROM PAGE 5)

Gary Solar (Ph.D., 1999)



State University of New York at Buffalo, Buffalo, NY, Associate Professor (Structural Geology and Tectonics)

My focus has been in the development of tectonic models that specifically illustrate the processes and mechanisms by which granite melt transfers through deforming crust. I have been studying these phenomena using an integration of field and laboratory data, based on the metamorphic, migmatitic and granitic rocks of western Maine.

* * *

Julia Baldwin (Post doctoral Research Associate 2003-2005)

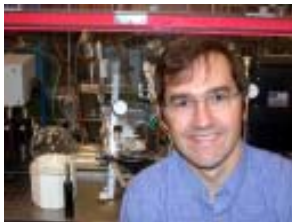


University of Montana, Missoula, MT, Assistant Professor (Metamorphic Petrology and Geochronology)

My research applies petrological and geochronological techniques to constrain the metamorphic and thermal evolution of orogenic belts, particularly those of granulite terranes.

* * *

Boswell Wing (Post doctoral Researcher 2002-2005)



McGill University, Montreal, Quebec, Canada, Assistant Professor (Geochemistry)

My research deals broadly with the geochemical interaction between the solid earth and its fluid envelope. In particular, I study atmospheric evolution, global redox cycles, and crustal fluid flow using techniques from stable isotope

geochemistry, metamorphic petrology, and inverse theory.

* * *

Aaron Pietruzka (Post doctoral Research Associate 2002)



San Diego State University, Assistant Professor (Geochemistry)

My current research at SDSU is focused on two major areas: (1) studies of the inner workings of active volcanoes from the production of melt within the mantle source region to its final eruption at the surface and (2) studies of the natural mass-dependent isotopic fractionation of heavy stable elements in a range of Earth materials.

* * *

Alan (Al) Brandon (Post doctoral Researcher 1996-1999)



NASA, Space Scientist, Rice University, Adjunct Faculty, Houston, TX

My present research is on planetary materials directed at gaining a better understanding of processes that occurred in the solar nebula, and the earliest differentiation histories and chemical evolution of terrestrial bodies. He also applies petrological and geochemical data to constraining the origin of terrestrial peridotites and magmatic rocks in relation to mantle dynamics, large-scale tectonic processes, and geochemical cycles.

* * *

**JOHN SACHEVERELL
A'DEANE COKE MEDAL –
MICHAEL BROWN**

Chair Michael Brown received the John Sacheverell A'Deane Coke Medal for 2005 from The Geological Society of London, which is the world's oldest geological society. The citation by Peter Styles read:

“For more than 30 years, Mike Brown has been an outstanding leader in metamorphic and tectonic geology. His work, which began on the Cadomian and Variscan belts of Brittany, has greatly furthered our understanding of how heat and mass are transferred within continents, correctly identifying the importance of melt in the tectonic evolution of orogenic belts. Since his work in France, Mike has broadened his reach, and has worked all over the world, including investigating granites in Greenland, quantifying metamorphic P-T-time paths in the Appalachians, studying mass transfer during contact metamorphism in South Africa, and where I personally have interfaced with him, working on the relationship between granites and tectonics in the Andes in Chile. Although he cut his teeth on anatectic rocks, Mike has broadened out into research into ultrahigh temperature and high pressure granulite metamorphism in India and Brazil, and the origin of paired metamorphic belts in Japan, and at scales ranging from the microstructural (using 3-D visualization techniques to investigate melt flow in migmatites) to the orogenic (developing models for the ascent and emplacement of melt, and investigating feedback relations between melting and deformation). Mike has also distinguished himself through his service to the science, and his willingness to participate in national and international scientific bodies. I should not fail to mention his service to the Council of this Society, and the fact that he proposed and founded the Metamorphic Studies Group. He also founded the respected Journal of Metamorphic Geology, which he continues to edit after more than 20 years. He is now in his fourth term as Chair of the Department at Maryland, one of the eastern USA's strongest in Geology.”

HOW CAN YOU HELP US?

There's excitement at Maryland in Geology. We're recruiting world-class faculty and talented students. We are exploring new frontiers in rapidly emerging fields. 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 underfunding 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 2005. 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 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