

# GeoGram

A publication of  
The University  
of Maryland  
Department of  
Geology  
2011



Geology Chair Roberta Rudnick  
Photo credit: Rhoda Baer

## LETTER FROM THE CHAIR

Dear Alumni and Friends,

The *GeoGram* is back! And much has happened in the intervening two years since you last received our newsletter. At the University there have been changes from the Department Chair to the President. In June this year, **MIKE BROWN** stepped down as Department Chair, after serving a record 21 years in the post. His years of transformative service and the accompanying ascendancy of the Department were celebrated in an one-day event in June, which drew together past and present members of our Department, other Department Chairs within the College of Computer, Mathematical and Physical Sciences (CMPS), as well as **DEAN HALPERIN** and **PROVOST WYLIE** (see article on Brown Fest, pg. 3). Yes, that's right—our very own Ann Wylie is serving as Provost while the search is on for a new Provost. To commemorate Mike's years of service, we have created the "Mike Brown Fund." This fund will be used to improve the overall undergraduate experience in our Department, starting with purchase of new, binocular petrographic microscopes for use by our majors. Please consider donating to this fund!

Last fall, the College of Computer, Mathematical and Physical Sciences merged with the College of Chemical and Life Sciences (CLFS) to form the new College of Computer, Mathematical, and Natural Sciences (CMNS). Steve Halperin served as interim Dean of the new college for the first year of this merger while a search was undertaken for a new Dean. In August this year, **DR. JAYNATH BANAVAR**, previously the Chair of Physics at Penn State University, and a highly distinguished and multidisciplinary physicist, became the new Dean. He

arrived with much positive outlook and energy and will lead our college through what promises to be interesting times. We are very grateful to the years of support we received from Dean Halperin and we welcome Dean Banavar to campus. Finally, to round out the changes at the top, President Mote stepped down in 2010 and **DR. WALLACE LOH**, Provost of the University of Iowa, became the new president of the University of Maryland.

Over the past two years our Department has continued to thrive and reach new heights, as reflected in the great showing in two of the major rankings of university graduate programs. Our geochemistry program ranked seventh in the nation in the 2010 U.S. News and World Report rankings of U.S. graduate programs (up from tenth in the previous rankings). In the same year, the long-awaited National Research Council rankings of U.S. Ph.D. programs appeared, and our Department fared well, ranking about seventh in public universities.

Much of the reason for our success lies in our faculty, who continue to do cutting-edge research, mentor students and garner acclaim and accolades. For example, in 2010, **WENLU ZHU** and **LAURENT MONTÉSI** published a paper in *Science* that used synchrotron radiation to map the distribution of basaltic melts within partially molten peridotite (see [www.geol.umd.edu/wzhu-movie](http://www.geol.umd.edu/wzhu-movie) for a very cool movie that takes you on a journey through interconnected melt channels in the mantle). In the same year Wenlu was promoted to Associate Professor with tenure and received a prestigious NSF CAREER award! Other accolades—and there

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## LETTER FROM THE CHAIR (CONT.)

are many—are highlighted later in this issue (see pg. 6-7, Recognition and Awards).

In 2010 we also welcomed a new faculty member, **SUJAY KAUSHAL**, who has a joint appointment with the Earth System Science Interdisciplinary Center (ESSIC). Sujay received his Ph.D. from the University of Colorado, Boulder, in 2003. He joined us from the Chesapeake Biological Laboratory at the University of Maryland Center for Environmental Science on the eastern shore. Sujay's research focuses on the ecology and biogeochemistry of watersheds and aquatic ecosystems, and he is engaged in long-term studies in the Chesapeake Bay region. He is a welcome addition to our surface processes group. However, not all news is good. We were sad to lose **ANDY CAMPBELL**, who was wooed back to a faculty position at the University of Chicago. During his time at Maryland, Andy built a world-class diamond anvil laboratory and was an excellent teacher and mentor of students at both the undergraduate and graduate levels. We will miss Andy and wish him well at Chicago.

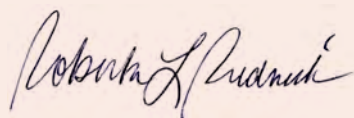
As is often the case, adversity also breeds opportunity. After an exhaustive search for a new Geophysics faculty member in which many stellar candidates were interviewed, we are pleased to announce that **VEDRAN (VED) LEKIC** will be joining our faculty as an Assistant Professor starting in January 2012. Ved is a seismologist who received his Ph.D. from the University of California at Berkeley and is currently a post-doc at Brown University. We are thrilled to have him join our faculty and the timing could not have been better, as the recent seismicity in the D.C. area reminds us that we are not immune to earthquakes, even in our seemingly stable position on a passive margin. See the highlight of Ph.D. student **LISA WALSH** (pg. 10) for more details on the August 23 Mineral, Va., earthquake.

And speaking of graduate students, our students continue to have an impact at the international level and receive prestigious awards (see awards section, pg. 6-7). For example, **KATERYNA (KATYA) KLOCHKO**, who completed her Ph.D. under the supervision of **JAY KAUFMAN** in 2009, received the 2010 Geological Society of America Outstanding Woman in Science

Award, and **RICARDO ARÉVALO JR.**, who completed his Ph.D. in 2010 under the supervision of **BILL MCDONOUGH**, received the inaugural University-wide distinguished dissertation award. We also celebrated the achievements of our alumni (read about the 2009 and 2010 Distinguished Alumni, **JENNIFER VERKOUTEREN** and **CAROL KENDALL**, respectively, pages 4 and 5).

Departmental staff members are integral to the efficient and smooth operation of the Department on a day-to-day basis. In truth, we couldn't function without their dedication, expertise and good humor. **JEANNE MARTIN** retired in 2010, after serving 28 years as assistant to the Graduate Director and Chair. We will miss her humor, skill and especially, her pitching at departmental softball games (but now the geochemists may have a chance to win)! Jeanne's position has now been filled by **MICHELLE MONTERO**, who brings with her awesome organizational and design skills—you will notice her handiwork in this newsletter. **DOROTHY BROWN**, who ably handles class scheduling and serves faculty and students in the Geology building, received the CMNS non-exempt staff award in 2010 and the University 15-year service award in 2011. **SANDY ROMEO**, who serves all of the faculty and students in the Chemistry building, marked her tenth year of service to the University in 2010. Finally, **SUZANNE MARTIN**, who keeps our accounts straight and the Chair on the right fiscal track, was recognized for her 25 years of service to the University in 2010.

So as I begin on the exponential learning curve that marks becoming Department Chair, I extend my best wishes to you all, and I hope that you will stay in contact with us. Please send us your news for future *GeoGrams* (see Alumni section, pg. 12) and do stop by to visit when you are in the neighborhood.



Roberta Rudnick  
11-15-2011

## BROWN FEST



Mike Brown



Phil Candela presents the history of the Department



Mike Brown, Jay Robert (Bob) Dorfman, Steve Halperin



Friends of the department gathered recently to acknowledge and celebrate the roots of the department, how far it has come, and where it might be headed. For nearly half of the history of the department, one Chair has been at the helm, **MICHAEL BROWN**.

The gathering, which coincided with his stepping down from the chairmanship after 21 years, has affectionately been called the 'BROWN FEST', in part to acknowledge his efforts in leading the department in making significant advances during his tenure. Mike was quick to point out during the gathering, "No, I am not retiring."

On June 10, 2011, friends and colleagues of the Department gathered at the University of Maryland Inn and Conference Center. The all-day affair started with a breakfast that allowed alums to meet current students, faculty to chat with staff who have moved on, and for all to learn about the history of the department and where it might be headed in the future.

The morning started off with comments by **PROFESSOR ROBERTA RUDNICK** addressing the nearly 70 attendees about the day's events. **CMPS/CMNS DEAN STEVE HALPERIN** gave some insight into what it was like to sit with chairs of departments at Administrative Council and how he enjoyed Mike's lively and well thought out contributions at the meetings. Steve acknowledged the advances the department has made, and recognized the efforts of Mike and his staff who helped make the positive changes come to fruition. The last of the faculty talks in the morning was by **PROFESSOR PHIL CANDELA** and was entitled *Geology Department Through Time*. Phil recalled a variety of topics including graduating from Harvard, and a few short weeks later, the recruitment of the first graduate students to the department. Phil also recalled early (clearly unsuccessful) attempts to close the department, and the positive changes the department has made in recent years. **MR. BILL SMITH**, a distinguished alumnus from Environ Alliance, Inc., spoke about the importance of a good relationship between students, faculty and the university. Bill, who serves on the CMNS Board of Visitors, has returned to campus several times since his graduation in 1981, and has talked freely with students about his education here, his expectations from employees at his company, and how students can better prepare for life in the workforce.

Just as in the early years of the department, student research has been an integral component of the educational experience in Geology. In an effort to recognize student's accomplishments, a small number of students, representing a wide range of disciplines, were asked to make presentations at the gathering. Three graduate students were asked to give oral presentations to the group: **BRIAN HARMS** - *Sulfur Isotopes as Tracers of Biological and Geological Processes*; **KRISTEN MILLER** - *Chemical Markers of Ancient Life: A Biogeochemical Study of the Precambrian Vazante Group, Brazil*; and, **BRIAN TATTITCH** - *The Effect of CO<sub>2</sub> on the Potential for Copper Extraction by Magmatic Volatile Phases*. All three did

a great job of addressing the audience with cutting-edge science, while keeping the details at a level that could be easily understood by attendees with disparately different backgrounds.

Poster presentations followed during a coffee break. Six students presented aspects of their work: **MIRIAM GALENAS** - *Highly Siderophile Element Characteristics of Apollo 17 Impact Melt Breccias*; **ANDREW GONYO** - *Assessing the Response of ENSO to Changes in Base Climate over the Last Millennium*; **JILL GRIBBIN** - *Quantification of Permeability-Porosity Relationships in Seafloor Vent Deposits: Dependence on Pore Evolution Processes*; **BRITTANY JENNER** - *Geomorphic Controls on Tidal Prism for Small Inlet-Basin Systems*; **STEPHANIE JOHNSTON** - *The Diversity of Ridges on Europa: Implications for Formation*; **JINGAO LIU** - *Mapping Lithospheric Boundaries Using Os Isotopes of Mantle Xenoliths*; and, **TAMMY NEWCOMER** - *Nitrogen Uptake and Denitrification in Restored and Degraded-Urban Streams*. The posters gave attendees another chance to talk to students about their research, and were well received. There was also a departmental timeline similar to the one in the *GeoGram* from 2007, but updated to include new hires, and included a comparison between Mike Brown's tenure as chair relative to other chairs (and deans) in the college.

The poster session was followed by a small number of talks to complete the morning session. **PROFESSOR PAUL TOMASCAC** (SUNY-Oswego, alumnus Ph.D. 1995) gave a talk entitled *Mike Brown: Geochemistry Pioneer*. Paul relayed stories about the construction of the geochemistry wing in the Chemistry Building, and alluded to stories about Mike in the field in Maine. **PROFESSOR AND CHAIR GARY SOLAR** (Buffalo State University, Brown's first Ph.D. student at Maryland, Ph.D. 1999) spoke about Mike as *The Model Departmental Chair*. Gary relayed some traits he learned from Mike that he thought were useful in being a good department chair. It was noted that Gary had several traits like his mentor (e.g., the inability to say 'no' to another term); Gary had just signed up for his 3<sup>rd</sup> term as chair, which would take him to 12 years at the end of his term (Mike endured 21 years). **PROFESSOR AND CHAIR-ELECT RUDNICK** followed with comments about possible avenues of improvement in the future, specifically enhancements to the geophysics program, and the difficulties we might encounter in attaining those goals due to the tight fiscal constraints now placed upon us. **PROVOST ANN WYLIE** finished the morning session by recognizing Mike's efforts, and acknowledging how far the department has come. She relayed stories of the early years teaching geology, including passing off the single carousel of 35 mm slides between professors in the hallway, as faculty went to teach. Following along the lines of Roberta's comments, Ann reiterated the need to continue to enhance geophysics and continue to strive for excellence in the future.

Lunch consisted of an Italian buffet. A short 'roast' followed, and participants had the opportunity to make remarks. Most comments were directed at or to Mike, and many acknowledged the elevated stature of the department within and outside the university. Mike also received well wishes from several people who could not attend, with messages coming from colleagues and former coworkers in Germany, Thailand and Australia. Mike followed this with comments of his own at the end of the luncheon. Many of the participants reconvened at Bill and Roberta's home for a wine and cheese reception. After libations, some wondered where the department would be 40 years from now.

# Celebrating Our Distinguished Alums



(L-R) Steve Halperin, Jennifer Verkouteren, Mike Brown. Photo credit: Thai Nguyen.

## 2010 DISTINGUISHED ALUM

### JENNIFER VERKOUTEREN

BY  
PROFESSOR MICHAEL BROWN

The 2010 Geology Alumna was Jennifer (Jenny) Verkouteren, who received her B.S. in 1980 and her M.S. in 1986, both in Geology, and in both cases with Jerry Weidner as her research advisor. She is an internationally recognized expert in asbestos characterization as well as in trace explosives and narcotics detection.

Jennifer's Masters thesis concerned phase equilibria, which led to her first job at the National Institute of Standards and Technology (NIST) as an editor for the series "Phase Diagrams for Ceramists," a compilation of important phase equilibria that forms a critical foundation in fields from materials science to geology. Subsequently, she was asked to lead a program mandated by Congress to establish procedures for optical analysis of asbestos. This work led to the development of standard

reference materials (SRM) for asbestos and the accreditation of hundreds of laboratories for the analysis of asbestos in schools, a research collaboration with Ann Wylie, and, in 1996, the Allen V. Astin Measurement Science Award. Among other tasks in the 1990s, Jenny was also involved in the certification of the size distribution of particles in hydraulic oil as a SRM, where she was instrumental in the development of new methods for particle counting using scanning electron microscopy, for which she received a NIST Technical Achievement Award.

The events of 9/11 led to a redirection of priorities in the Surface and Microanalysis Science Division at NIST. So Jenny headed up a multi-million dollar research effort, funded by the Department of Homeland Security, to build a metrology (the science of measurement) and standards infrastructure at NIST to support national priorities in trace explosive detection. More recently, she has begun leading a new effort related to forensic analysis and the development of cutting-edge measurement technologies for quantitative analysis of trace levels of illicit narcotics.



(L-R) Steve Halperin, Carol Kendall, Mike Brown. *Photo credit: Thai Nguyen.*

## 2011 DISTINGUISHED ALUM

### CAROL KENDALL

BY  
PROFESSOR MICHAEL BROWN

The Distinguished Alumna for 2011 was Carol Kendall. Carol is a Research Hydrologist at the U.S. Geological Survey in Menlo Park, California. Since 1990 she has been Chief of the Isotope Tracers Project, a National Research Program. The purpose of this project is to investigate and solve problems of national importance through the development of new methods and applications for CHNOS stable isotopes—and the best part, Carol gets to choose the problems. Carol's main field of interest is watershed biogeochemistry, and her main research focus is tracing sources of nutrients and contaminants in large-scale aquatic ecosystems. Her other research interests include: the impact of isotopic fractionations and heterogeneity in shallow hydrologic systems on the determination of water and solute sources; nitrate sources and cycling; and, the use of biota isotopes as indicators of nutrient sources, land use and redox (reduction–oxidation) reactions.

Carol received her B.S. and M.S. from the University of California, Riverside. After three years working as a geochemist at the California Institute of Technology, Carol moved east in 1980 to join the U.S. Geological Survey in Reston, Virginia as a Research Hydrologist. While working full-time at the Geological Survey, Carol completed a Ph.D. at the University of Maryland in 1993 with Phil Candela as her adviser. In mid-Ph.D., she transferred back to the west coast to take up her present position at Menlo Park.

Carol is co-editor of the 1998 book “Isotope Tracers in Catchment Hydrology;” she has taught dozens of isotope hydrology short-courses over the past 30 years for various federal, state, academic, and international organizations; she has served on 10 Doctoral committees; and she has published about 150 papers and book chapters. During her time at the U.S. Geological Survey, Carol received eight internal awards for superior and meritorious service; and in 2010 she was elected a Fellow of the American Geophysical Union for “outstanding contributions to isotope hydrology and biogeochemistry, and specifically for her pioneering work on the dual isotopes of nitrate.”

## MEET THE NEW FACULTY

### SUJAY KAUSHAL



Sujay joined our faculty as an Assistant Professor in 2010 with a joint appointment with the Earth System Science Interdisciplinary Center (ESSIC). His research focuses on the ecology and biogeochemistry of watersheds and aquatic ecosystems, primarily through long-term studies in the Chesapeake Bay region. Sujay received his B.S. from Cornell University, his Ph.D. from the University of Colorado, Boulder, and was a post-doc at the Cary Institute of Ecosystem Studies in Millbrook, NY, before joining the faculty at the University of Maryland.

Sujay is an excellent addition to both Geology and ESSIC. Welcome aboard Sujay!

### VEDRAN LEKIC



Ved will start as an Assistant Professor in our Department as of January 2012. Ved is a seismologist, whose research seeks to understand the state, dynamics, and dominant processes of the solid Earth, as well as those of other planets and satellites. His main approach involves imaging structures in the Earth's interior by using sophisticated computational tools to model waves set up by earthquakes. He received his A.B. from Harvard University, his Ph.D. from U.C. Berkeley, where he worked with Barbara Romanowicz, and is a post-doc at Brown University.

We look forward to Ved's arrival in January!



## RECOGNITION & AWARDS

In 2010 and 2011 the University of Maryland Geology Department proved that, once again, our faculty not only provide the education and expertise that our students need to succeed, but that our students, in turn, take that expertise from the faculty to highlight their own talents. Those talents have “shone through” by way of faculty promotions, as well as awards received by faculty and students.

In 2010 and 2011 we saw four faculty members receive promotions. **ALAN JAY KAUFMAN** (2010) and **JAMES FARQUHAR** (2011) were both promoted to Professor. **WENLU ZHU** (2011) was promoted to Associate Professor (a tenured position) and **PHILIP PICCOLI** (2011) was promoted to Senior Research Scientist.

**SASWATA HIER-MAJUMDER** was awarded a blended learning fellowship to convert one section of GEOL120, Environmental Geology, into a blended learning course.

**WILLIAM MCDONOUGH** was elected to fellowship of the American Geophysical Union, an honor that is given to only 0.1% of the members in any given year. Bill also received the Sul Ross State University Distinguished Alumni Award, an award that is given to those who have represented Sul Ross State University with distinction.

**LAURENT MONTÉSI** received the 2010 College of Computer, Mathematical and Physical Sciences Assistant Professor Award. This award is given to an assistant professor in the year following their three-year review and recognizes particularly fine accomplishments in research and education.

**ROBERTA RUDNICK** was appointed as a Distinguished University Professor in 2010, the highest honor conferred by the University of Maryland. She was also inducted into the National Academy of Sciences and became a Fellow of the American Academy of Arts and Sciences. Roberta was also the recipient of a Fulbright Grant to conduct research in Tanzania at the University of Dar es Salaam while on sabbatical in the 2010-2011 academic year.

**RICHARD WALKER** was the recipient of the Kirwan Faculty Research Prize. This University system-wide award recognizes a faculty member for a highly significant work of research, scholarship, or artistic creativity completed within the last three years.



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Many of our graduate and undergraduate students, as well as our high school interns, have also been recognized for their academic efforts and contributions to the University of Maryland.

1. Leonardtown High School student **CHRISTIAN BURTON** (pictured here with John Merck) won the 2010 Geology Department prize for Best Earth Science-related project at the Prince George's Country Science Fair.

2. Eleanor Roosevelt High School student **HEAGAN AHMED** (pictured here with Laura Herbert) won the 2011 Geology Department prize for Best Earth Science-related project at the Prince George's Country Science Fair for a project supervised by Mike Evans.

3. **NATALIE SIEVERS**, (pictured with A. Jay Kaufman) received the Subaru Minority Award, Geological Society of America and the Mineralogical Society of America Undergraduate Student Award.

**RICARDO (RICK) ARÉVALO**, Ph.D. 2010, (advisor: McDonough) received the (inaugural) Distinguished Dissertation Award (one of only four awarded university-wide), which recognizes original work that makes an unusually significant contribution to the discipline.

**KATERYNA KLOTCHKO**, Ph.D. 2009, (advisor: Kaufman) received the Subaru Outstanding Women in Science Award, Geological Society of America.

**KIRSTEN MILLER**, (advisor: Kaufman) received the Spackman research grant from the Society for Organic Petrology 2010 and a Green Scholarship, University of Maryland. This scholarship provides support for students working with faculty affiliated with the Earth Systems Science Interdisciplinary Center.

**EMILY SELDOMRIDGE** (advisor: Prestegard) received the Best Poster Award at American Association of Petroleum Geologists Meeting held in Crystal City, VA in October, 2011.

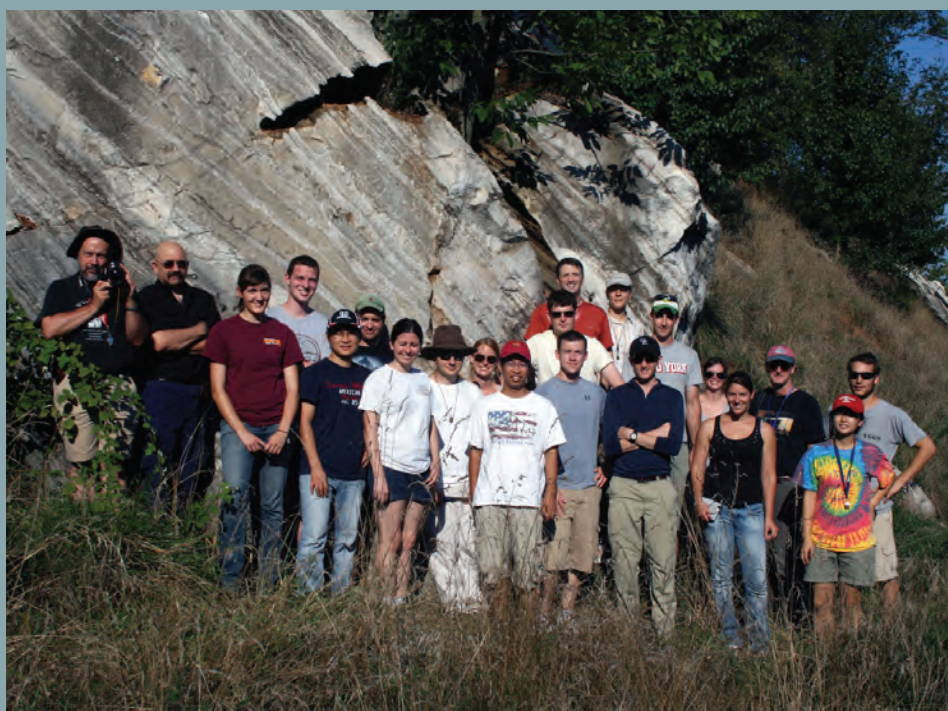
**BRIAN TATTITCH**, (advisors: Candela/Piccoli) Best Talk Award 2011, Ph.D. Category. Runner up: **XIAOMING LIU** (advisors: Rudnick/McDonough).

**JILL GRIBBIN**, (advisor: Zhu) Best Talk Award 2011, M.S. Category.

Runner up: **BRITTANY JENNER** (advisor: Prestegard).

**REBECCA FISHER**, (advisor: Campbell) Best Talk Award 2010, Ph.D. Category. Runner up: **BRIAN TATTITCH** (advisors: Candela/Piccoli).

**NICK GAVA**, (advisor: Evans) Best Talk Award 2010, M.S. Category. Runner up: **MARCIE OCCHI** (advisor: Prestegard).



The group stands in front of the Cockeysville Marble near a mall. (L-R) Front Row: John Merck, Phil Candela, Emily Worsham, Kevin Miller, Jingao Liu, Christopher Yakymchuk, Mariam Galenas, Aaron Martin, Brittany Jenner, Yu Huang, Andrew Gonyo, Daniel Eldridge, Kristen Miller, Xiaoming Liu. Back Row: Christopher McCallum, Michael Mengason, Sara Peek, Tommy Tamarkin, Abbie Dean, Richard Walker, Nick Gava. (Not pictured: A. Jay Kaufman)

## GEOLOGY FIELD TRIP

On Saturday and Sunday the 28th and 29th of August 2010, faculty and graduate students from the Geology Department went on a field trip to geological sites in Maryland and northern Virginia (organized by Prof. Jay Kaufman). Among others, the group visited localities like the Sykesville Formation in southwestern Washington D.C. along the scenic Potomac River, Ellicott City's Granodiorite, the Mineral Hill Mine at the Liberty Reservoir near Baltimore and the Hunt Valley Mall (which contains Setters Formation pelites and Cockeysville Marble). Thus was initiated the first annual Departmental field trip.

You can read more at:  
[www.geol.umd.edu/fieldtrip.htm](http://www.geol.umd.edu/fieldtrip.htm)

We would like to report on the events of the 2011 field trip, but someone named Irene (Hurricane Irene!) gave us no choice but to cancel the trip.



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## FACULTY HIGHLIGHT

EILEEN  
McLELLAN

### EVOLUTION OF A CITIZEN SCIENTIST

BY  
PROFESSOR A. JAY KAUFMAN

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Eileen McLellan started out her scientific career on a prograde path studying metamorphism of rocks during deep burial and melting, but her deep concern with environmental issues soon took her on a retrograde path that would ultimately have broad impacts on both policy and politics across the nation.

Before moving to the United States, McLellan worked with adviser **GRAHAM CHINNER** at Cambridge University on the petrology of migmatites—a rock that forms at the deep frontier between igneous and metamorphic regimes during prograde metamorphism and partial melting. At the conclusion of her Ph.D. studies in 1982, Eileen crossed the pond to continue her research as a Post-Doctoral Fellow working with **BOB TRACY** at Yale University (currently at the Virginia Polytechnic Institute and State University).

Her petrographic studies allowed McLellan and Tracy to reconstruct the metamorphic history of mountain ranges, which took her one summer to the Cassier Mountains near Glacier Bay in Alaska. While mapping and searching for molybdenum deposits, Eileen mused about the tectonic upheavals and metamorphic insults that resulted in the spectacular glaciated mountains she was traversing. At the same time she wondered how development of the geological resources of the region could eventually destroy this pristine wilderness. This was the seed of change that would germinate at Maryland and direct the traffic of her scientific life thereafter.

McLellan was lured to Maryland in 1984 by **LUKE CHANG**'s dream to create a great research department. While the search was specifically for a structural geologist, the department has always hired the best person for the position, and metamorphic petrologist was close enough. Eileen joined the Maryland team including Chang, **PHIL CANDELA**, **ROGER NIELSEN**, **BOB RIDKY**, **TONY SEGOVIA**, **GALT SIEGRIST**, **PETE STIFEL**, **JERRY WEIDNER**, and **ANN WYLIE** on the fourth floor of

the unrennovated (and unnamed) building we now occupy. It was several years later, after many requests by both Chang and later **MIKE BROWN** that a sign was finally put up on the Geology Building. Speaking of the transformational changes from a teaching-oriented to a research-oriented faculty, and to the lack of signage, McLellan said, "The department needed to be put on the map, literally!"

Moving forward with her research on migmatites and mountain building with graduate students **STEPHANIE STOCKMAN**, **ERIK MILLER**, **PAMELA COOLEY**, **CHARLES (SCOTT) SOUTHWORTH** (M.S. 1993), **DAVID LINDER** (M.S. 1990 co-advised with **ANN WYLIE**), **SUSAN HARRINGTON** (M.S. 1990), **CHERYL PETRINA** (M.S. 1992 co-advised with **BOB RIDKY**), **JERRY BURGESS** (M.S. 1994 co-advised with **MIKE BROWN**) and **JACQUELINE MANN** (M.S. 1998), McLellan quickly started taking on her share of senior thesis students (see sidebar, pg. 13: McLellan Advised Senior Thesis Projects Through The Years). "I think that the senior thesis program was the greatest learning experience for undergraduates. I really enjoyed watching them grow in the sciences," said McLellan.

The seed of change planted in Alaska took root and began to grow in McLellan at Maryland. She started wondering about the policy implications of environmental impacts, and began exploring ways to create and teach policy-relevant courses. "I woke up realizing that I wanted to make a difference in this world," said McLellan. She recognized that the key to the problems lie in teaching and engaging people's minds about the key environmental issues facing us today.



To this end, McLellan initiated a course through the University of Maryland Honors program called “Managing Planet Earth” that taught a mix of students from across campus. While satisfying, Eileen later brought the course back to the department with “Water, Earth, and Humans,” which looked at geology through an environmental lens. Clearly Eileen was the go-to faculty when it came to teaching freshmen about global change. “At that time, there were no organized environmental science programs on campus,” she said. McLellan brainstormed with **OWEN THOMPSON** (from the Meteorology Department, now the Department of Atmospheric and Oceanic Sciences) and **RUTH DEFRIES** (from the Geography Department) who is now a Professor at Columbia University and a member of the National Academy of Sciences. Together they initiated and team-taught a World Course with a focus on global change (GEOL 123: Causes, Implications, and Impacts of Global Change), which continues to today with a new cast of faculty from the three participating departments.

Perhaps McLellan’s most lasting influence on the Geology Department was the fact she suggested the search committee seeking a new Department Chair communicate with **MIKE BROWN**—also an expert in metamorphic petrology and migmatites—who had done wonders at a similarly sized department in Great Britain. She contacted him once the search opened, suggesting he apply for Chair of the Geology Department. “I think Mike either blames or thanks me now, depending on the day of the week,” she said. However, in the new research agenda Mike brought to the table in 1990, Eileen saw that the department was going off in a trajectory different from her own.

“I needed a sabbatical,” McLellan said, “and given the current of my interests at the time, I applied to be a Congressional Science Fellow [on Capitol Hill], and dove into the deep end of the environmental policy pool.” She soon joined up with **SENATOR RON WYDEN** (D-OR) as the local expert on environment and public works, energy and natural resources. After her first week thrown into writing a report on the Hanford nuclear site, Eileen said, “I was hooked.” She subsequently became well known as a science advisor to Senator Wyden, drawing the attention of other science-savvy people on the Hill, including **VICE PRESIDENT AL GORE**. But for the Supreme Court decision on the

contested Florida votes<sup>1</sup> in the 2000 Presidential election, Eileen would probably have been working in the White House.

“It was an unbelievable year [as a Congressional Science Fellow] and an extraordinary experience,” said McLellan. In the following year she juggled work between commitments on the Hill and those at Maryland. “It was a blur, especially driving from the Senate parking lot like a bat out of hell to get back to teach.” Rather than returning to Maryland permanently, McLellan took the advice of a colleague and set forth to lobby for environmental issues. “It is a teaching job,” she said, “mostly to get congressmen to understand something they don’t necessarily want to hear.”

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“I wanted to  
be making a  
difference on  
the ground and  
in the water.”

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In 2000 Eileen joined the lobbying firm of Will and Carlson Inc. working on both the Clean Water Act and the Endangered Species Act for the firm. However, her specialization was in water resources in the western USA where she represented local watershed groups, especially those concerned about salmon habitat restoration. Her primary contribution is summed up in an article available at: [http://willandcarlson.com/Publications/Salmon%20Series/salmon\\_series.htm](http://willandcarlson.com/Publications/Salmon%20Series/salmon_series.htm).

While giving a voice to the helpless salmon and the four hells (hydropower, harvest, hatcheries, and declining habitat) that affected them, McLellan realized that she wanted to do more than just speak on their behalf. “I wanted to be doing what my clients [the people, not the fish] were—making a difference on the ground and in the water,” she said. After leaving Will and Carlson in 2002 Eileen picked up shop and moved to Maryland’s eastern shore to join the Chester River Association as its “Riverkeeper<sup>2</sup>.”

Eileen’s job included being the spokesperson for the Chester River, writing grants for

habitat restoration, initiating lawsuits to protect the river, speaking out for revisions to national or state policy, and starting a citizen monitoring program. She said, “I enjoyed seeing people care about the creek in their own backyard.”

McLellan also organized a snapshot event, basically a “Day in the Life of the Chester River Watershed” to better connect the people, and their backyards, to the river, thus multiplying her voice throughout the land.

By 2006, however, Eileen’s metamorphosis continued, her purview growing beyond the Chester River and into national problems. She joined the Environmental Defense Fund that year where she is an expert in developing strategies for watershed protection and restoration, with a focus on the Chesapeake Bay and also the upper Mississippi River and Great Lakes region. Eileen focuses on translating conservation science into policy and on designing incentives that encourage private landowners to protect and restore functioning ecosystems.

Working as a scientist at the interface between politics and policy, McLellan feels that she has finally reached equilibrium with her environment. “My current job draws on all the pieces of my life.... Here is something where all of my skill sets are being put to good use.”

For McLellan, Geology was an incredible foundation for a wide array of careers and opportunities. “The Department was where I learned who I was, including my strengths and weaknesses, and it challenged me to grow.” From the seed of an idea to an irresistible force, Eileen McLellan has developed her life to enact real and sustainable environmental change for our world.

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1. The 2000 Presidential election was noteworthy for a controversy over the awarding of Florida’s 25 electoral votes, the subsequent recount process in that state, and the unusual event of the winning candidate having received fewer popular votes than the runner-up.

2. Riverkeeper is an environmental non-profit organization started by Robert F. Kennedy, Jr. first dedicated to the protection of the Hudson River in New York; today there are over 150 keepers, including one for the Chester River, all of whom are members of the Waterkeeper Alliance.



Lisa at an outcrop of the D.C. fault zone near the National Zoological Park that was first identified by N.H. Darton of the USGS back in 1950.

## GRADUATE STUDENT HIGHLIGHT

LISA WALSH

BY

ASSISTANT PROFESSOR AARON MARTIN

The magnitude 5.8 earthquake that rocked the Washington, D.C. region early in the afternoon on Tuesday, August 23, 2011 added excitement to the day for all the professors and students in the Department of Geology. No one was more thrilled than Ph.D. student Lisa Walsh because the subject of her dissertation is active faulting in the D.C. area.

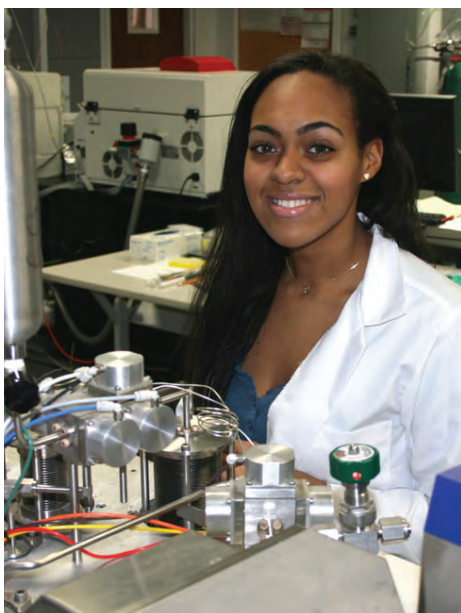
"I have been investigating the possibility for a large-magnitude earthquake to occur on the East Coast and it is very exciting for it to happen during my dissertation research," she said. "The Mineral, Va. earthquake is giving a major boost to my research and re-illuminating to both the public and the scientific community the

possibility of seismic hazard in the Eastern U.S."

The 2011 earthquake was not the first passive margin earthquake Lisa experienced. She was an undergraduate in environmental studies at the University of North Carolina at Asheville when a magnitude 3.6 temblor struck north of the city on August 24, 2005. "The earthquake occurred when I was reading my textbook for my first geology course. It inspired me to pursue scientific research that helps mitigate geologic hazards. Working on science that benefits the public makes me feel that my research is important."

Bachelor's degree in hand, Lisa came to the University of Maryland in August 2007 to begin study for a master's degree. She chose to work with Assistant Professor Aaron Martin relating the steepness of rivers in central Nepal to bedrock lithology, breached landslide dams, and active faults. Look for a paper about this work in an upcoming issue of *Journal of Geophysical Research – Earth Surface*.

After completing her master's degree in August 2009, Lisa continued working with Professor Martin for her Ph.D., now focusing on active deformation in the national capital region. "For my Ph.D., I was looking for an opportunity



Natalie working on a gas source mass spectrometer in the Department of Geology Stable Isotope Facility.

## UNDERGRADUATE STUDENT HIGHLIGHT

NATALIE SIEVERS

BY

PROFESSOR A. JAY KAUFMAN

Natalie Sievers spent two months last summer joyfully crushing rocks in Siberia with a team preparing samples for geochemical analysis that we had been unable to ship out of Russia.

Asked about the experience in Russia, Natalie said, "It was amazing, unforgettable, and I want to go back...in the winter!" However, she added, "The culture shock was profound...also, there was no good peanut butter."

Natalie had been training in the Maryland laboratories for four years, ever since joining Prof. Jay Kaufman's group as an intern from Charles Herbert Flowers High School in nearby Springdale, Md. Natalie won second place in

her high school science fair for the project she completed that year, and then matriculated to the University of Maryland in fall 2008

"It has been the only job I've had in my life...and I have gotten to do a lot of amazing things, Sievers said. "[The assistantship in the laboratory] has allowed me to travel, and learn the details of instrumentation that would otherwise have been a black box for me."

Natalie received an American Chemical Society-Petroleum Research Fund SUMR research fellowship in the following spring where she learned new wet chemical and instrumental techniques for biomarker analysis. Natalie, as "lab boss," has been instrumental in teaching other undergraduate students, as well as another minority intern, in the wet chemical and mass spectrometric techniques used in our paleo-climate and paleo-environmental studies.

After outstanding performances in her mineralogy and petrology courses, Assistant Professor Sarah Penniston-Dorland invited Natalie to join her in a field excursion to Catalina Island this winter to work on a petrographic study of a subduction zone metaconglomerate.



to work in the field locally and still study active tectonics. Intraplate earthquakes are some of the least understood, therefore when I discovered recently active fault systems exist in the D.C. area it presented an excellent dissertation topic,” she said. Although most people don’t think of the Washington, D.C. region as seismically active, passive margins are occasionally struck by moderate to large earthquakes. The area was also subjected to shaking by a magnitude 3.4 temblor near Germantown, Md. on July 16, 2010, and a paper on stress transfer coauthored with Professors Martin and Laurent Montési will be forthcoming in *Seismological Research Letters*.

The 2011 Mineral earthquake dramatically ramped up popular interest in seismicity in the national capital region. Lisa was the subject of an article by the University of Maryland student newspaper, and presented her work at the October 17, 2011 meeting of the Eastern section of the Seismological Society of America. She will also present at the fall meeting of the American Geophysical Union. She can attend the AGU meeting thanks to donations from alumni. Be on the lookout for more earthshaking research from this promising young scientist!

This project on the Catalina schist will ultimately become Natalie’s Senior Thesis project.

With all her hard work in both the laboratory and the classroom, Natalie stands out as our undergraduate highlight this year, and is a model for minority undergraduate students across the country. Based on her interest and ability in the discipline of mineralogy, Ms. Sievers recently received the Mineralogical Society of America Undergraduate Prize. Moreover, based on her outstanding work ethic and contributions to the department, she was awarded a Geological Society of America SUBARU minority fellowship in early October at the annual GSA meeting in Minneapolis.

Natalie has matured exponentially through her first three years of intense studies here at the University of Maryland. With graduate school in her sights, she is currently looking for a Master’s program in mineralogy and/or petrology (“Anything with minerals is where it’s at,” she says.). CalTech, Johns Hopkins, Yale, or Chicago? Perhaps. Wherever she lands, Natalie is sure to succeed, and we wish her the best in her future endeavors.



2009/2010 Academic Year (L-R): Brittany Jenner, Stanley Ohaka, Jesse Dietderich, Phil Candela, Steven Fisher, Gerasimos Michalitsianos, Hayfa Khenissi, Tyler Baril, Sarah Regen, TJ Deane.

## SENIOR THESIS

The Department of Geology senior thesis program, coordinated by Phil Candela for 13 years, has been a fixture of the Department of Geology since 1972. Senior thesis posters have enhanced the program since 2003; these represent one of the four presentations associated with the long established program, which is used as a model of success across campus. We wish each of our departing students, and newest alumni, the best of luck with their future endeavors.

### GEOLOGY SENIOR THESIS TITLES (GEOL 394): 2009/2010 ACADEMIC YEAR

**LITTLE, JESSICA.** Biomarker Analysis of Carbon Rich Shales in the Neoproterozoic Bambuí Group, Brazil (Advisor: GS Miller/Kaufman); **BARIL, TYLER.** Assessment of Natural Gas Production Potential in the Devonian Marcellus Shale of Pennsylvania (Advisor: Kaufman); **DEANE, TJ.** W-WO<sub>2</sub> and W-WO<sub>3</sub> Oxygen Fugacity Relationship at High Temperature and Pressure (Advisor: Campbell); **DIETDERICH, JESSE.** Modeling Fractional Crystallization of Group IIB Iron Meteorites (Advisor: Walker); **FISHER, STEVEN.** Investigation of the age and origin of the Sykesville Formation in Maryland (Advisors: Martin/Piccoli); **JENNER, BRITTANY.** Hydraulic Consequences of Invasive Hydrilla (submerged aquatic vegetation) in Tidal Channels: Implications for Wetland Maintenance (Advisor: Prestegard); **KHENISSI, HEYFA.** Sulfur isotopic composition and concentration in throughfall and precipitation samples from a suburban forest (Advisor(s): Farquhar/Prestegard); **REGEN, SARAH.** Fluid-Rock Interactions: Lithium Concentrations in Minerals from a block in the Franciscan Complex, California (Advisors: Penniston-Dorland/McDonough/Piccoli)

### GEOLOGY SENIOR THESIS TITLES (GEOL 394): 2010/2011 ACADEMIC YEAR (no photo available)

**BREEDEN, BENJAMIN.** A stable isotopic investigation of resource partitioning among neosauropod dinosaurs of the Upper Jurassic Morrison Formation (Advisors: Holtz/Kaufman/Carrano); **COLLINS, JENNIFER.** Locating the Westminster-Potomac Terrane Boundary in the Maryland Piedmont Province (Advisor: Martin/Piccoli); **CONNOLLY, BRIAN.** HSE and Re-Os systematics of the 3.3 Ga Weltevreden komatiites from the Barberton Greenstone Belt, South Africa: Implications for early Earth’s mantle evolution (Advisor: Puchtel); **FARRELL, ADAM.** Carbon Dioxide Storage in Stable Carbonate Minerals (Advisor: Evans); **KEANE, JAMES.** Lithospheric Extension on Icy Satellites (Advisor: Montési); **Michalitsianos, Gerasimos.** Time Dependence of Postseismic Creep Following Two Strike-Slip Earthquakes (Advisor: Montési); **OHAKA, STANLEY.** Evolution of Porosity and Permeability during Brittle Faulting (Advisor: Zhu); **OHLY, REBECCA.** Geochemistry of apatite from the carbonatite and associated alkaline rocks of the Magnet Cove Igneous Complex, Hot Spring County, Arkansas (Advisor: Piccoli); **WATTER, KATHERINE.** Water Weakening and Temperature Effects on the Deformation and Transport Properties of Indiana Limestone (Advisor: Zhu)

To see the posters from this year’s presentations and lists of theses over the past 36 years, go to: [www.geol.umd.edu/senior-thesis](http://www.geol.umd.edu/senior-thesis)

## ALUMNI NEWS

### JOHNNY JAMES, B.S. GEOLOGY, 1973

Johnny earned an M.S. in Geology from the University of Wisconsin in 1977 and is currently working as an Exploration Manager with Dutcher and Company, Inc., an oil and gas property management company supervising geological operations, evaluating company acreage and proposed drilling locations, reviewing industry submittals, generating new play opportunities, and recommending lease acquisition and drilling activity.

### JAMES HUGH TREXLER, B.S. GEOLOGY, 1974

Jim Trexler earned a Masters in Geology in 1976 from the University of Oklahoma and a Ph.D. in Geology in 1984 from the University of Washington, Seattle. He is a Professor of Geological Sciences in the Department of Geological Sciences and Engineering, in the Mackay School of Earth Sciences and Engineering, at the University of Nevada, Reno.

### ALICIA W. SIEGRIST, B.S. GEOLOGY, 1975

Alicia earned a Masters in Geochemistry and Mineralogy from Pennsylvania State University and is currently an Associate Professor and the Department Chair, Astronomy/Chemistry/Physics/Physical Science at Anne Arundel Community College.

### CAROLINE KING TOOLE, B.S. GEOLOGY, 1975

Caroline earned her M.S. in Education/Administration for the William Woods University in 2004 and is currently working for the AmeriCorps/Lake of the Ozarks Watershed Alliance as a Missouri Clean Water AmeriCorps Member. She is married and has raised two children. Caroline writes, "I really enjoyed studying Geology at the University of Maryland, College Park and even though I never actually worked as a geologist, I've used my degree extensively."

### BRIAN ARKELL, B.S. GEOLOGICAL ENGINEERING, 1978

Brian earned an M.S. in Economic Geology from the New Mexico Institute of Mining and Technology and in July 2011, Brian was elected to serve as Senior Vice-President, Exploration and Corporate Development for Rio Novo Gold, Inc., a Denver-area emerging gold company focused on the acquisition, exploration

and development of gold mineral resource properties in South America. Prior to accepting his new position, Brian held the position of Director of Geology for the Newmont-owned Hope Bay Mining Co., in the Canadian arctic, where he led a successful effort to triple exploration activities, an Archean greenstone-type property.

### JOHN MILDENBERGER, B.S. GEOLOGY, 1979

John and his wife, Michele, started their own company, Ruth Associates, Inc. nearly 20 years ago which evaluates environmental contamination, design and construction of remedies, water supply and regulatory interface for their clients. Since moving to Florida in 2002, John has become involved with efforts to restore the Everglades and is currently the lead plaintiff (Mildenberger v USA) in a law suit filed in the Federal Court of Claims in D.C. to stop discharges to the St. Lucie River and restore flow from Lake Okeechobee to the Everglades.

### JOHN M. LIBERT, M.S. GEOLOGY, 1981

In 1997, John joined the Electronics and Electrical Engineering Laboratory of the National Institute of Standards and Technology where he conducted research in video quality measurement and was active in quality measurement standards activities of the Video Quality Experts Group and the IEEE. His current NIST research aims to develop methods and standards for measurement of electronic displays.

### JAMES A. LANG, B.S. GEOLOGY, 1985

James is a Senior Project Manager with Brilliant Lewis Environmental Services, NJ, a full-service environmental consulting and contracting firm. James is responsible for compliance with State and Federal environmental laws and regulations, Phase I & II environmental assessments, brownfields redevelopment, site remediation, due diligence and business development.

### GARY S. DWYER, B.S. GEOLOGY, 1987

Gary earned an M.S. and Ph.D. from Duke University and is a Senior Research Scientist with the Earth & Ocean Sciences Department at Duke University's Nicholas School for the Environment. Gary is a sedimentary geologist focused on paleoclimatology and paleoceanography using proxy indicators from the sedimentary record.

### JOHN EDWARD NAY, B.S. GEOLOGY, 1990

John is the proprietor of a lodge-style B&B and

Private Dining Club called the *NayStation* in Ocean View, Ka'u District, Hawai'i. He is 3500' above sea level on the SW flank of Mauna Loa that features a stunning view of the shoreline from Kauna Point in the West, to Ka Lae (South Point) to the South and East. The 4 plus acre property includes a lava channel with benches, lava balls, and a vent. John is also the Secretary/Event Coordinator of the Ka'u Chamber of Commerce.

### KENT RATAJESKI, M.S. GEOLOGY, 1995

Kent earned a Ph.D. in Geology from the University of North Carolina, Chapel Hill, in 1999 and is a lecturer in the Department of Earth and Environmental Sciences at the University of Kentucky College of Arts & Sciences.

### DAMIAN HODKINSON, B.S. GEOLOGY, 1994

Damian earned an M.S. in Geosciences from the University of Arizona and is currently the co-owner of True Energy Solutions, a company providing energy solutions to families in the Pittsford, NY, area. Damian also resides on the Board of Directors for Efficiency First, a national nonprofit trade association that unites the home performance workforce, building product manufacturers and related businesses and organizations in the escalating fight against global warming and rising energy costs.

### JEREMY FISHER, B.S. GEOLOGY & B.A. GEOGRAPHY 2003

Jeremy earned an M.S. and Ph.D. in Geological Sciences at Brown University. He is now a scientist at Synapse-Energy Economics, Inc. in Cambridge, Mass., a research and consulting firm that specializes in energy, economic and environmental topics. At Synapse, Jeremy works on climate change impacts in states and on the energy sector, developed green energy plans for states and regions, and developed models to estimate emissions reductions from new renewable energy resources.

### DAVID WEINSTEIN, B.S. 2007

David won several awards, including the 2010 National Science Foundation (NSF) Graduate Research Fellowship and the 2010 Zale Parry Scholarship from the Academy of Underwater Arts and Sciences (AUAS).

### KATERYNA KLOCHKO, PH.D. GEOLOGY, 2009

Kateryna is a Postdoctoral Associate at the Geophysical Laboratory at the Carnegie Institution for Science and was featured in the February 2011 issue of *EARTH* magazine.



## IN MEMORIAM

### SALLY PULLEN FREEDMAN

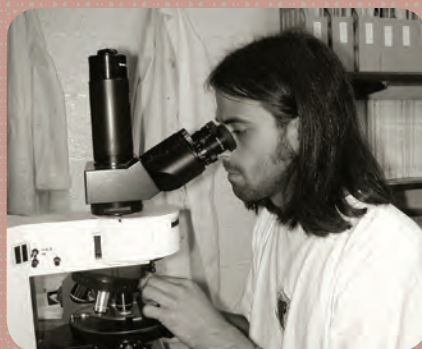
It is with great sadness that we report the passing of Mrs. Sally Pullen Freedman on March 20, 2011, at age 99. Along with her husband Irvin, they formed the architectural company I.E. Freedman and Associates. Mr. Freedman, after a trip as a young man to the Colorado School of Mines, started a gem and mineral collection. That collection grew, and Mr. and Mrs. Freedman had the means and the vision to donate a part of their private collection to form the Gems and Minerals Museum as the Department moved into their new building in 1982. That very generous donation makes up the majority of the collection in the museum today, which is enjoyed by the public each year during Maryland Day and through special tours by local school and enthusiast groups.



## IN MEMORIAM

### MARC LIPELLA

It's with immense sadness we report the death of Marc Lipella (B.S. 2004). He completed his senior thesis with Bill McDonough, Richard Ash, Phil Piccoli and Roberta Rudnick on the geochemistry of CAI's (calcium-aluminum rich inclusions in chondrites). He worked at the Smithsonian following graduation in their analytical labs. While at Maryland he played on the ice hockey team. He was also a keen rock musician and played guitar for the band Zen Black in the Baltimore/Washington area.



(See full story, pg. 8-9)

### MCLELLAN ADVISED SENIOR THESIS PROJECTS THROUGH THE YEARS

1. Creamer, Tony. (1984) *The Consanguineous Nature of a Tonalite-Granodiorite Pluton and its Mafic Inclusion, Boca De Quadra Pluton, South-eastern Alaska*
2. Riley IV, Winston. (1985) *Fluid Migration Histories Determined Through Changes in Strain Mechanism Across Western Maryland*
3. Thomas, Jennifer L. (1986) *Changing deformation mechanisms in a Mylonite Zone: an example from Glen Mills, Pa.*
4. Jirgal, Mark. (1986) *Spacing of Cleavage as an Indicator of Total Strain*
5. Parry, Robert. (1986) *Structural Study of the Musconetcong Nappe at Rattlesnake Hill, Rieglesville, Pa.*
6. Basdekas, Leon. (1987) *A Study to Determine the Structure of the Fort Hill Anticline Between Queens Point and Twenty-First Bridge Near Keyser, West Virginia*
7. Dwyer, Gary. (1987) *Determining the Mechanisms Responsible for a Small Scale Fold on the Wills Mountain Anticline*
8. Nemoff, Peggy. (1987) *A Remote Sensing Exploration for the Continuation of the Honey Hill Fault in Southern Connecticut*
9. Buxton, Cory. (1988) *Determination of the Crustal Level of Deformation of the Quetico Fault Zone*
10. Eybel, Mike. (1988) *Strain Analysis Between Two Massive Quartzite Units on Sugarloaf Mountain Fredrick County, Maryland*
11. Brown, Shari. (1989) *Silica Cement in the Juanity Sandstone: Testing Two Hypotheses of Formation*
12. Gott, Carmen. (1989) *Geometry and Mechanics of Folding at Woodmont Station, Maryland*
13. Pennington, Dan. (1989) *Strain in the Stony Creek Dome Measured by  $Rf/\sigma$*
14. Patrick, Sean. (1989) *P-T Conditions of Granulite-Facies Metamorphism in the Southern Appalachians, Winding Stair Gap, North Carolina*
15. Danaceau, Chris. (1990) *Structural Relationships Between the Augen Gneiss Member of the Baltimore Gneiss and the Gunpowder Granite in the Towson Dome Near Baltimore, Maryland*
16. Messina, Theresa. (1990) *A Comparison of the Macroscopic and Microscopic Fracture Patterns Associated with the Quetico Fault Zone*
17. Kovacs, A. Laszlo. (1992) *Structural evidence of Mesozoic rifting in the Weverton Formation, Maryland, Central Appalachians*
18. Bettendorf, David. (1993) *Local groundwater flow in a Central Piedmont drainage basin: porous media or fracture flow?*
19. Kulp, Andrew. (1994) *Influence of pre-existing structure on early Mesozoic rift geometries: Culpeper Basin, Virginia and Maryland*
20. Joyce, Jim. (1995) *Possible lithologic controls on multiple cleavage in the Martinsburg Shale*
21. Smith, Milisa. (1995) *Does rock competency control clast shape in the Liberty Complex?*
22. Tenace, Cathleen. (1995) *The origin of grain size variations in the Port Deposit Gneiss and its significance in the interpretation of regional deformation*
23. Ndofo, Norbert. (1997) *Assessing the role of denitrification of nitrate within a constructed wetland*

# We placed the call... you answered

In the 2009 GeoGram we placed a “Call to Action” asking for your support... and you answered! Your generous contributions have allowed us to provide services to our students that would not be otherwise possible. However, times being as they are, the department continues to feel the economic pressure of State budget cuts and constantly works to find the delicate balance that allows us to provide the best educational experiences possible for our students. As you will see in the “Your contributions, at work” section, your generosity benefits our students in many ways. In particular, this year we launched the “Mike Brown” fund to honor the long years of Mike’s service as Chair. The first goal of this fund is to replace the old monocular microscopes in our teaching labs with modern, binocular scopes and, thanks to contributions associated with the Mike Brown Fest earlier this year, we are well on the way, but will require continued support to reach our goal of buying 10 scopes.

Therefore, once again, we ask for your support. Tax-deductible gifts to the department can be made online through the UMCP Foundation website (<http://advancement.umd.edu/giving/index.php>). Enter “Geology” in the search box in the right hand corner to ensure that your donations are allocated to the correct department. We’ve also enclosed a postage paid return envelope for check or cash gifts. If you are writing a check, please be sure to include “Geology” in the notes section to ensure that your funds are allocated properly.

## YOUR CONTRIBUTIONS, AT WORK.

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This year two students received grants from our alumni funds to help them attend conferences. **LISA WALSH** (see graduate student highlight, pg. 10) received a grant to help offset costs of attending the Fall AGU meeting in San Francisco this December, where she will present a poster on the Mineral, Va.,

earthquake in a late-breaking session. **NATALIE SIEVERS** (see undergraduate student highlight, pg. 10) received a grant to help offset the costs of her attendance at the annual GSA meeting, in Minneapolis, where she received the Subaru minority fellowship.

The following students received Field Camp scholarships, which are awarded on the basis of financial need and academic performance: **TYLER BARIL, BRIAN CONNOLLY, BRITTANY JENNER, SARA REBECCA OHLY** and **SARAH REGEN**.

**STEVEN FISHER** received a senior thesis grant. This is awarded to students of the highest academic caliber to offset costs related to completion of their senior thesis.



# We Acknowledge Our Donors

**W**e are grateful for the generosity and continued commitment of our donors during the past several years, and we salute those of you who contribute each year. We acknowledge the importance of each contribution in support of our education and research missions. Making available opportunities for students to be involved in the excitement of advancing knowledge is critical to the development of the next generation of scientists who will solve problems of societal relevance. In addition, for many of our undergraduates our ability to help with the costs of field camp and senior thesis research is critical to their success. Please accept our apology for any error or omission; please notify us of any such infelicities so that we do not repeat the mistake in the future.

## BENEFACTORS

OCTOBER 2009 –  
DECEMBER 2010

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Mark A. Mangold  
Daniel M. Masterson  
Andrew Laurence Masterson  
Robert L. McCormick  
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Alan J. Kaufman  
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A.F.M.S. Scholarship Foundation, Inc.  
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JANUARY 2011 –  
CURRENT

*Up to \$99 per annum*

Leon Basdekas  
Dorothy Brown  
John H. Fournelle  
Allision Gale  
B. Suzanne Martin  
Jeanne S. Martin  
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Laurent Montési  
Igor Puchtel  
Wenlu Zhu

*Up to \$100 - \$250 per annum*

J. Robert Dorfman  
Mark Feigenson  
George Helz  
Margaret A. Karwoski  
Alan J. Kaufman  
Robert W. Marriott  
Sarah C. Penniston-Dorland  
Philip Piccoli  
Joseph P. Smoot  
Ann G. Wylie  
E-an Zen

*>\$250 per annum*

Michael and Jennifer Brown  
Tony Busalacchi  
James Farquhar  
William McDonough  
Roberta L. Rudnick  
Peter B. Stifel  
Richard J. Walker



## GEOLOGY DEPARTMENT • FALL 2011

### (L-R) FRONT ROW:

Alan Jay Kaufman, James Farquhar (with photo of Richard J. Walker), Wenlu Zhu, William McDonough (with photo of Sarah Penniston-Dorland), Zella, Laurent Montési, John Merck, Thomas Holtz, Roberta Rudnick, Michael Brown, Daniel Lathrop, Philip Piccoli, Karen Prestegard, Philip Candela, Piper, Michael Evans, Sujay Kaushal, Igor Puchtel, Aaron Martin

### SECOND ROW:

Minjin Baek, Huan Cui, Ming Tang, Tracey Centorbi, Michael Mengason, Rose Smith, Hailong Bai, Jesse Wimert, Palma Botterell, Kristen Miller, Tyler Drombosky, Jodi Gaeman, Kevin Miller, Stephanie Johnston, Kristy Long, Michael Antonelli, Daniel Eldridge, Sara Peek, Brian Harms, Yadviga Zhelezinskaya, Emily Worsham, Gregory Shofner, Gregory Archer, Xiaoming Liu,

Yulia Larionova, Valentina Puchtel, Yu Huang, Lisa Walsh, Caitlin Brown, Brian Tattitch, Katherine Watter, Julia Gorman, Harrison Lisabeth, Richard Ash

### BACK ROW:

Joanna Patterson, Audrey Ougier-Simonin, Michelle Montero, Jingao Liu, Mathieu Touboul, Dorothy Brown, Richard Gaschnig, Joost Hoek, Yongbo Peng, Todd Karwoski, Sandy Romeo

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*GeoGram is an annual publication of the University of Maryland, Department of Geology. We welcome your comments and feedback.*

*For address changes and personal updates, please visit [www.geol.umd.edu/alum-reg](http://www.geol.umd.edu/alum-reg)*

*Acknowledgments: We would like to acknowledge Todd Karwoski and Alan J. Kaufman for their photography which appears throughout this issue; and Loretta Kuo, Michelle Montero, and Phil Piccoli for their work on this year's GeoGram.*



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