STONY BROOK UNIVERSITY

Department of Geosciences

2015 Year in Review

Stony Brook University
College *of* Arts and Sciences

Letter from the Chair

2015 was the 50th anniversary of the department. Since it was formed in 1965, it has changed its name from the Department of Earth and Space Sciences to the Department of Geosciences, but it has always maintained its focus on excellence in research and teaching. We celebrated the big anniversary with a special event in October, featuring lab and campus geology tours, research posters, a delightful series of ten 3-minute research talks, Tim Glotch delivering the university's Wolfstock Homecoming talk *"50 Years of Stony Brook Geosciences Around the Solar System"*, and a short reminiscence by Bob Dodd, the first faculty member hired by Ollie Schaeffer as he started to build up the department a half century ago.

The excellent quality of those 3-minute talks was presaged back in April during the university-wide FameLab competition. Talks by our own Jesse John *"Nano-Alcatraz"* and Steven Jaret *"A history of rocks"* were both selected as alternates, giving the department two of the top three positions in the competition.

Steven Jaret and Jesse John at FameLab

A version of Bob Dodd's presentation can be found on pages 4 and 5 of this year's issue of the *Geosciences Year in Review*. On pages 6 and 7, Tim Glotch describes the science behind RIS^{4}E, the planetary research center at the core of the major new rehab underway on the second floor, and on pages 8-10, Owen Evans describes the plan for the rehab and the progress to date. With the official naming of a new high-pressure mineral found in a meteorite as *liebermannite*, we now have three minerals named after our faculty – as described in my story *Our Three 'ites*, on page 11.

Tyrand Fuller (photo at left), a 2005 graduate of the department's MS program in hydrogeology, gave a very well-received keynote presentation to the graduates. He is now Senior Hydrogeologist at Suffolk County Water Authority.

We had a very strong 2015 graduating class, including thirteen students who were GEO BS graduates and nine who graduated with the ESS BA. Four (Christie Cino, Jason Gregerson, Amy Kasten, and Brian Mulder) graduated with honors. Our dozen graduates in our master's programs were split evenly between the MS in Geosciences and the MA in Teaching in Earth Science. Nine students (Yu Chen, Cecilia Cheung, Lonia Friedlander, Jasmeet Kaur, Hui Long, Anna Plonka, Guangrui Qian, Millicent Schmidt, and Bill Woerner) graduated with the Ph.D.

The Myron Fuller Award, which honors outstanding seniors in the Geology and/or Earth and Space Sciences majors, was awarded to Jason Gregerson and Alicia Patti. Meredith Kraner received the Oliver Schaeffer Award, which honors the department's founding chairman, Ollie Schaeffer. In addition to her impressive work in the classroom, Meredith excelled in a range of research projects with three different faculty members and as an undergraduate TA (for which she also won an Outstanding Service Award at our graduation ceremony). The juniors, class of 2016, look to be equally strong. It turned out to be impossible to single one of them out for the Oliver Schaeffer Endowed Scholarship, which is supported by Professor Robert Warasila (Ph.D. '76) and the Schaeffer family. As a result, for the first time ever, the scholarship was awarded to two students – Gavin Piccione and Katlyn LaFranca.

Oliver Schaeffer Award winner Meredith Kraner, with Prof. Deanne Rogers.

Co-winners of the Oliver Schaeffer Scholarship, Gavin Piccione and Katlyn LaFranca.

The David E. King Field Work Award, which is made possible through the generosity of David E. King (MS '84), was awarded (for the second year in a row!) to Michael Thorpe to support his field research, under the supervision of his advisor Joel Hurowitz, entitled *Tracing the geochemical and mineralogical variations in sedimentation within the Icelandic Basalts*. The award for excellence in teaching went to Xintong Xi, whose work as a TA was widely praised. Our students are truly remarkable….

-Dan Davis (daniel.davis@stonybrook.edu)

Keeping in Touch

One of the great pleasures for everyone who participated in our recent 50th Anniversary Celebration was having a chance to visit with old friends and colleagues. The celebration also reminded the department's main office how difficult it is to keep track of and stay in touch with all of you. We would very much like to improve that. Over the years we've often relied on Stony Brook's Alumni Association to provide us with your e-mail and conventional addresses. Recognizing that many of you might prefer to avoid general Alumni Association promotions and instead have more direct communication with the department, we've decided to again gather our contact information for the department's alumni and friends.

To that end, we've created a survey that we'd like you to complete to give us the information we need to keep in contact with you. You can access the survey from the Alumni and Friends link off our homepage (www.stonybrook.edu/geosciences/) or by navigating directly to: http://goo.gl/forms/RmMA63niF2 . We will not share your information outside of the department.

You may also want to create or update your profile with the Alumni Association: http://alumniandfriends.stonybrook.edu/

The Alumni Association offers you some choices regarding what kinds of communication you'd like to receive from them but we really have little influence over what they do. On the other hand, if we don't have contact information for our alums, we will use whatever information they may have.

We gratefully acknowledge gifts to Department of Geosciences Funds in 2015 from the following alumni and friends:

Andrew Y. Au
Kenneth J. Baldwin
Richard Baldwin
Aaron J. Celestian
Fang-Ping Chen
Michael P. Convery
Robert Eby
Owen C. Evans
Jean M. Evans
Barbara L. Faulkner
Kurt T. Goetz
Gilbert N. Hanson
Judith A. Kelley-Moberg
David E. King
Sari J. Koshetz
Vesna and Tomislav Kundic
John Lamprecht
Richard M. Lesse
Louise Levien
Robert C. Liebermann
Paul E. Misut
Willard S. Moore
John S. Nolan
Thomas L. Norris
Kim Marie Pacanovsky-Nolan
Pete Palmer
John B. Parise
Moshe P. Pasternak
John A. Schaeffer
Jason C. Schaeffer
Martin A. Schoonen
Curtis L. Sheldon
Paul L. Siegel
Laura R. Virga
Richard J. Walker
William Ward
Scott Yanuck
Wenlu Zhu

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Robert Dodd—*Early ESS*

At our celebration of the department's 50th anniversary on Saturday October 17, we had the pleasure of having Bob Dodd tell us about some of his experiences in the department at its birth and his perspectives on it today. A prominent figure in the study of meteorites, he was the first faculty member hired by the department's legendary first chair, Ollie Schaeffer.

This is what Bob told us:

You lot are lucky. I once delivered a 90-minute lecture to the Meteoritical Society, to celebrate the society's 50th anniversary and fill a gap between the afternoon and evening programs. When Gerry Wasserburg introduced me, I asked, "What if I run over?"

Be at peace! Dan Davis suggested a time frame of five to 20 minutes. I plan to split the difference.

Aerial view of the brand-new ESS Building, 1968

Cast your minds back to 1965. I'm sitting in Ollie Schaefer's office in what's now Harriman Hall. On a couch that faces his desk sits an elderly woman dressed in black from hat to shoes, and leaning on a cane. She reminds me of the grand duchess in the movie *Anastasia.* Cecilia Payne – Gaposchkin, an eminent Harvard astrophysicist, has come to Stony Brook to advise Schaefer as he recruits astronomers. She listens intently as he shares his vision for ESS: 60 faculty members and 200 graduate students in a grand, new building, working together in and among four disciplines. Although we had not yet broken ground for the ESS building, Ollie described an imagined addition over the 250-seat lecture hall.

I was dazzled, but our visitor wasn't. When Ollie finished his pitch, she glared at him, tapped her cane on the floor impatiently, and exclaimed, "You're mad!"

Ollie just grinned and changed the subject: his invariable reaction to attack. But her response jolted me, and I didn't buy it. When Sam Goldich and I joined Schaefer to kick off Earth and Space Sciences, interdisciplinary departments were the rage. MIT and Pittsburgh topped a long list that included our sister institution, SUNY Albany. Such departments were timely. Just five years had passed since Harry Hess and Bob Dietz discovered sea floor spreading, the key to and parent of plate tectonics. As their work married oceanography and geology, so the Apollo program drew together stargazers and rock knockers.

The Lunar Science Group, 1969. In back, left to right: Gerard Dehner, Bob Lewis, Bob Warasila, Ted Ludkawicz, Karen Karlstrom, Rudy Schott, Bob Muller, and Jerry Barber. In front: Ollie Schaeffer, Fred Gwinner, and John Funkhauser.

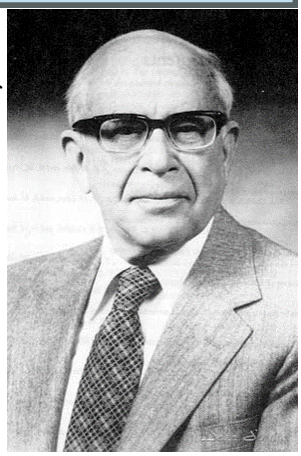
Gil Hanson, circa 1970.

But Payne-Gaposchkin wasn't entirely wrong. In 1965, the state created the Marine Science Research Center and located it on South Campus, very far from the site of the ESS building. MSRC bloomed and soon siphoned off our oceanographers, shrinking Ollie's dream by 25%. That meteorology never set root in ESS diminished us too, but in fairness that discipline really belonged with oceanography. It now prospers in the big School of Marine and Atmospheric Sciences. (I can't avoid the feeling that a more farsighted administration would have located MSRC close to ESS, to promote rather than discourage collaboration.)

In 1969, the year when this building was completed, Schaefer became seriously ill. One cost of keeping him on as Chairman was appointing an Executive Officer to offload such administrative chores as the budget and building maintenance. When Ollie nominated me, I

Robert Dodd—*Early ESS*

pleaded that I was unworthy of the high honor and recommended another kid, Gil Hanson, for the important job. But Schaefer prevailed, as he usually did. (That's why I urged those who visited his office to button their wallet pockets.) My most vivid memories of my year as Exec are a couple of heated financial skirmishes with the administration and endless struggles with air conditioning. To this day, a dream that involves air handling system AC-1 can awaken me in a cold sweat.



Sam Goldfinch

Another step designed to lighten Ollie's administrative load was dividing our fast-growing faculty (23 in 1971) into three groups: mineralogy-petrology, paleontology-sedimentology, and astronomy. The leader of the Min-Pet group, Jim Papike, would succeed Ollie as chairman in 1972.

Subdivision of ESS seemed necessary in 1969, but I feared it would promote group-group competition. I urged Ollie to make the arrangement temporary, but he didn't. As the state and federal gravy trains slowed down in the 1970's, competition for scarce money and new faculty lines made it hard to keep astronomy and geology pulling in the same direction.

Jim Papike

Some of us in ESS, specifically astronomers Toby Owen and Roger Knacke and I, tried to hold the two groups together. Toby and I designed and taught Planetary Science I and II, back-to-back introductory graduate courses with astronomical and geological perspectives. I even included astronomers in my annual fall field trip for new students, the Great New York Regional Trek (GNYRT). I recall Phil Solomon listening restlessly by a road cut while I showed students how we define rock units in messy high grade metamorphic terranes. "Seems awfully qualitative" was his terse judgment, and my explanation that the quantitative part comes later in the lab didn't impress him.

A delightful, very wet cookout by Lake Tiorati lightened the mood. It became very jolly indeed in the evening when Richard Wagner, Phil's student, gave a boozy star lecture on the lake shore.

Partying by Lake Tiorati

The peace of Lake Tiorati reinforced old friendships and made new ones, but it didn't close the growing rift within ESS. Astronomy didn't move to its ancestral home in Physics until 1998, but it and what would become GEO were in different orbits much earlier. That made life awkward for those of us who worked and taught between them. I felt like an Inuit with his feet on two separating ice floes. No doubt the planetary astronomers felt the same. Toby left for the University of Hawaii in 1990, Roger for a branch of Penn State in 1992. I stayed awhile longer, retiring the year when the AST-GEO split became physical and final.

Ollie Schaeffer

When Marya and I retired and moved north to rural Columbia County, I was glad to go, sure that Ollie's dream, and mine, was dead and gone. I was wrong. Tim Glotch's prominence on this celebratory occasion shows that the department is still probing the Earth in its breadth and depth and reaching beyond it toward its neighbors in space. GEO is still, for practical purposes, ESS. Oliver Schaefer would be as pleased at that as he was disappointed when the oceanographers moved south.

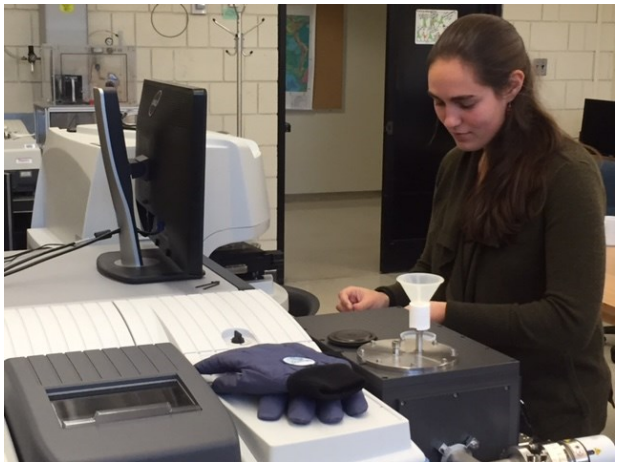
I'm pleased too. It's nice to find that home is still here!

Tim Glotch: *Stony Brook Planetary Science on the 'RISE'*

In 2013, NASA selected the Stony Brook-led research program *Remote, In Situ, and Synchrotron Studies for Science and Exploration* (RIS^{4}E—pronounced "rise") team as one of nine nodes of its *Solar System Research Virtual Institute* (SSERVI). SSERVI was created as a joint venture of NASA's Science Mission Directorate (SMD) and Human Exploration and Operations Mission Directorate (HEOMD) to further the scientific knowledge and exploration of the Moon, Phobos and Deimos (the moons of Mars), and near Earth asteroids. The governing philosophy of SSERVI, and by extension, the RIS^{4}E team, is "science enables exploration and exploration enables science." The RIS^{4}E team is now in the second year of a five-year, $5.5 M cooperative agreement with NASA, and the work that we are doing is helping to pave the way for the future human exploration of the Solar System.

The RIS^{4}E team is composed of leading researchers at Stony Brook, Brookhaven National Laboratory, and other universities and NASA centers, each of which brings unique capabilities and talents to the team, ranging from laboratory analysis to field studies. The five-year RIS^{4}E effort is divided into four main research themes. These themes are:

1. *Preparation for Exploration: Enabling Quantitative Remote Geochemical Analysis of Airless Bodies*. Remote sensing enables human exploration and sample return by providing global chemical and mineral data for the targets of interest and a basis for identifying sites of maximum scientific impact for sample return. Thermal gradients and space weathering of airless bodies greatly complicate remote spectral analysis. Working with the University of Oxford in the U.K., we've developed a specialized chamber, dubbed PARSEC (Planetary and Asteroid Regolith Spectroscopy Environmental Chamber) that can recreate the conditions at the lunar surface. This chamber allows us to collect infrared spectra of materials, including meteorites and lunar samples returned to Earth by the Apollo astronauts, and compare them directly to infrared data acquired by space telescopes and orbiting spacecraft.

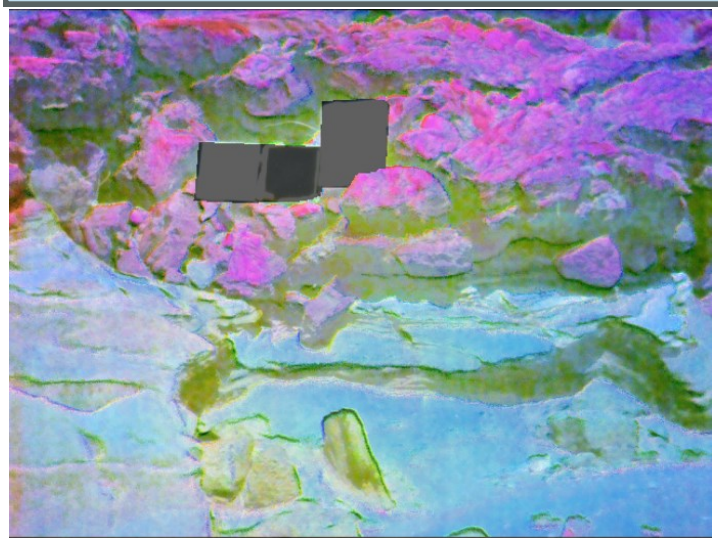


Graduate student Katherine Shirley opens the PARSEC chamber in preparation for measurements of mineral samples under simulated lunar conditions

2. *Maximizing Exploration Opportunities: Development of Field Methods for Human Exploration*. Science-motivated field work helps us evaluate the role of handheld and portable field instruments for future human exploration, enabling rapid, low-risk, comprehensive, and quantitative assessments of the local geology and regolith materials. These advances will quickly inform astronauts about where to go and which samples to select, and improve our understanding of how exploration plans based on available remote sensing data are implemented and revised in the field. Our team, led by Prof. Deanne Rogers and NASA scientist Jacob Bleacher, has conducted two field seasons in Hawaii and will conduct three more field excursions in New Mexico. A major goal of this work is to test new types of scientific instruments that might benefit future explorers. Prof. Rogers, assisted by graduate students Gen Ito and Marcie Yant, is testing the utility of a handheld thermal infrared camera, which could detect small differences in rock composition that might not be obvious to the human eye.

3. *Protecting our Explorers: Understanding How Planetary Surface Environments Impact Human Health*. Future astronauts will be exposed to harsh environments with potentially harmful but unknown health effects. The RIS^{4}E team is performing experiments to determine the reactivity and toxicity of lunar and analog materials, and soon we will begin tests on actual lunar and meteorite samples. This work is being led by Geosciences faculty members, Joel Hurowitz and Martin Schoonen, who are working hand in hand with Profs. Bruce Demple and Stella Tsirka from the Department of Pharmacology. This unique collab-

Tim Glotch: *Stony Brook Planetary Science on the 'RISE'*

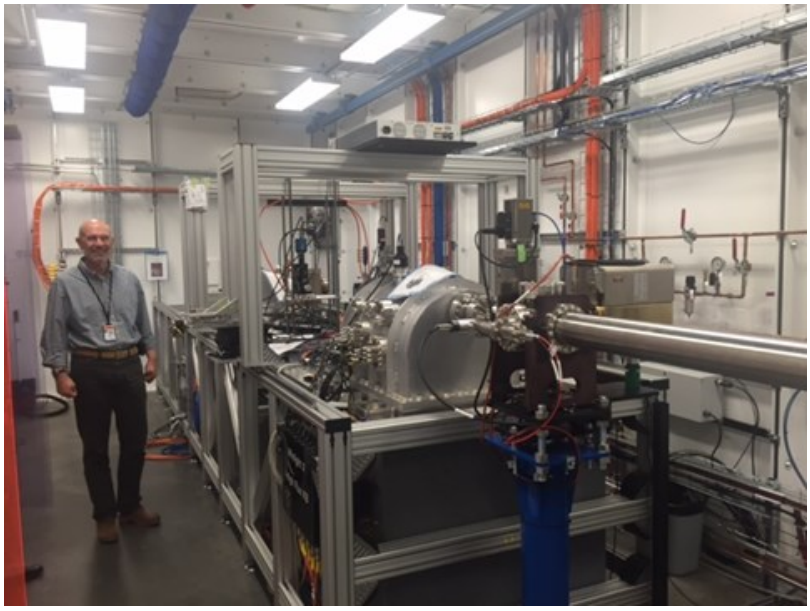


False-color infrared image of volcanic rocks from the 1974 lava flow on the Kilauea volcano. The different colors represent differences in composition and texture. The bright pink/ purple colors indicate the presence of a pure SiO_2 coating that is nearly invisible to the naked eye.

oration of geoscientists and biologists provides the RIS^{4}E team with the needed expertise to tackle an important problem related to the long-term exploration of the Solar System.

4. *Maximizing Science from Returned Samples: Advanced Synchrotron and STEM Analysis of Lunar and Primitive Materials*. The National Synchrotron Light Source II (NSLS II) at Brookhaven National Laboratory (BNL) is now open to conduct experiments. This next-generation light source provides unparalleled chemical and mineralogical analysis of precious lunar and primitive meteorite materials. The RIS^{4}E team is taking advantage of the close relationship between Stony Brook and BNL, utilizing the Submicron Resolution X-Ray spectroscopy (SRX) beamline at NSLS II. This new X-ray beamline will allow us to probe the structure and chemistry of planetary materials at 50 nm spatial resolution.

These four science themes tackle some of the major issues related to the current and future human exploration of the Solar System while ensuring that NASA's future exploration activities will result in the maximum science return for the substantial financial investment that will be required. The RIS^{4}E team is continuing in the strong tradition of planetary science and exploration at Stony Brook that goes back to the department's founding days. I look forward to providing updates on our progress in future issues of this newsletter!



RIS4E Co-Investigator Juergen Thieme, the SRX beamline lead in the SRX hutch at NSLS II.

You can learn more about RIS^{4}E at:

ris4e.labs.stonybrook.edu

Owen Evans: *Big Changes in the ESS Building*

In the 2011 edition of the Year in Review, I wrote a short article touching on efforts by the campus and department to maintain and improve the facilities and infrastructure of the ESS Building and grounds. I'm pleased to report that we've made some good progress, but each of the three endeavors we were then working on seems to have had its own wrinkles.

Our building "envelope" project (new roofs, replacement of most windows, expansion joints etc.) made it to about the 98% completion mark before "going off the rails." The general contractor declared bankruptcy in February 2015, a year or more after work on the building had already come to an effective halt. There are still outstanding items that are languishing, unfinished, while the New York State Construction Fund, bonding agency and contractor all hash out a resolution. Apparently, this is not an uncommon end for major construction projects awarded to the lowest bidder in the state system. Despite that, we are all happy for the (mostly) leak free working environment we now enjoy.

Seen from this vantage point, the ESS Building looks quite attractive.

In 2011, having just completed the design phase of another major Construction Fund project to redo the portion of the academic mall approaching ESS, I had anticipated being able to now show off a much-improved exterior appearance of the building and grounds. But, a victim of the downturn in state revenue, the construction phase of this project never managed to even get "on the rails". Suffice it to say that, if you come to visit, you'll be able to observe weathering and erosion. Geology in action - step carefully!

Up close, the exterior of the building is showing its age.

Easily the most satisfying project from back then is the one that was locally funded by the campus and managed by Campus Planning, Design and Construction (CPDC). The renovated mass spectrometry lab, which had to be re-built after a fire damaged our first renovation, is now in full operation – renovation complete! Associate Professor Troy Rasbury, along with visiting Associate Professor Gary Hemming, recently hired technician Katie Wooton, and an energetic group of undergraduate and graduate students, have 4(!) mass spectrometers up, running and generating excellent data.

The renovated mass spectrometry lab.

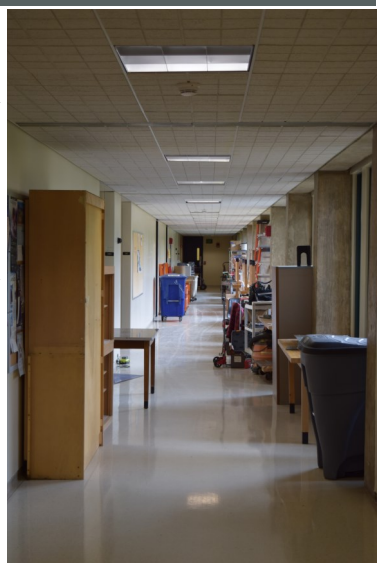
With respect to renovation and construction, our satisfaction comes from maintaining and renovating our facilities to enable the best and most exciting research, teaching and learning to take place. But, of course, our operating budget makes no provision for this kind of work. Over the decades we became fairly adept at doing "in-house" renovations, capitalizing on the skills of the machine shop staff and other motivated staff, faculty and students. More recently however, the university has banned anyone from the academic side of the operation from doing any renovation work at all. We are technically unable to even hammer a nail in a wall to hang a picture.

As the cost of lab renovations is in the vicinity of $500 per square foot it's easy to understand that projects within individual academic departments are few and far between. Repurposing existing spaces is limited by what's there and we've been particularly constrained by the layout of a couple of labs on the second floor of the Undergraduate Wing (towards Harriman Hall and Physics). In particular, the old x-ray teaching lab (ESS 273) and adjacent hallways and darkrooms (4!) were so inflexible that the space has been relatively underused for decades. In similar fashion, the historic subdivision of ESS 281 (microprobe and TEM labs) rendered those spaces quite unfriendly.

Fortunately, state and campus administrators recognize that infrastructure built in 1967 won't continue to support its goals indefinitely. With the backing of the Provost, Dennis Assanis, this past summer we embarked on what is almost certainly the largest interior renovation in the history of the building thus far. Funded largely by the state but managed by CPDC, we've undertaken a project to renovate almost the entire Undergraduate Wing of the second floor to create the Center for Planetary

Owen Evans: *Big Changes in the ESS Building*

Exploration (CPEX), a state of the art research, teaching and learning complex (for more on this project, see Tim Glotch's article on pages six and seven). The renovated facilities will enable us to capitalize on the space and also serve as a strong statement of our long-term commitment in the areas of planetary and lunar research.



All of the labs on the second floor hallway of the north ('undergraduate') wing of the building had to be entirely emptied out before demolition and construction could start.

The first step in enabling the construction to get underway was to clear the area of its current uses and occupants. This was like a giant game of dominos. Clearing the electron microprobe and TEM labs (ESS 281A-E) at the far end of the hall was relatively easy as both instruments had developed terminal issues some time ago. Working back towards the Main Office, Bob Liebermann's and Baosheng Li's ultrasonics labs (ESS 273 and 275) were relocated to the main floor. To make room for them in ESS 107, Glenn Richard (MS 1976; Educational Coordinator for the Mineral Physics Institute - MPI) had to relocate to the Reading Room (formerly the Map Room of the ESS Library). To make room there, we had to clear out the journals, books and shelving that had carefully been set up as a local reference facility to ease our pain when the library was closed in the mid 1990's.

The string of dominos associated with relocating the petrology teaching lab (ESS 267) was mercifully shorter, even if the weight of rock samples to be moved was substantial. The teaching samples have now been moved down to the skinny room that in the early 1980's was Lois Koh's drafting area. Sometime after that service center was closed, the room became part of MPI and subsequently the Center for Environmental Molecular Science. Most recently, before this move, we used the space for graduate student offices.

Hanna Nekvasil's petrology undergraduates working late at night in our newly renovated room 115. Brightly lit and housing a set of new petrographic microscopes, this room is a major upgrade from the old room 267 that was lost in the creation of the Center for Planetary exploration.

In order to accommodate the move of the petrology teaching lab proper, we had to undertake a redesign and rehab of the introductory geology teaching lab on the first floor, in the corner by the freight elevator. Again with great support from the Provost and CPDC, we now have an entirely refurbished room with LED lighting and data projector and custom storage for the polarizing microscopes.

The final lab space to be cleared for the construction of CPEX was the Geosciences Electronics Shop (ESS 265). Rather than a string of dominos, this move was more like an archeological excavation. Bill Huebsch (still an essential and active member of our community despite having retired from State service over five years ago) operated the shop out of the lab for 45 years before he graciously agreed to move upstairs. It's astonishing what can be accumulated over time, especially when your knowledge and expertise enables you to recognize the value of old materials and devices such that you're reluctant to throw away anything that might be of use.

Demolition began in September.

With the move of the Electronics Shop, the decks were finally cleared and we turned the space over to CPDC to begin demolition. All the lab benches, electric and plumbing back to the walls and circuit breakers were among the first things to go. Then the walls separating the darkrooms from each other and from the x-ray lab were brought down with a

Owen Evans: *Big Changes in the ESS Building*

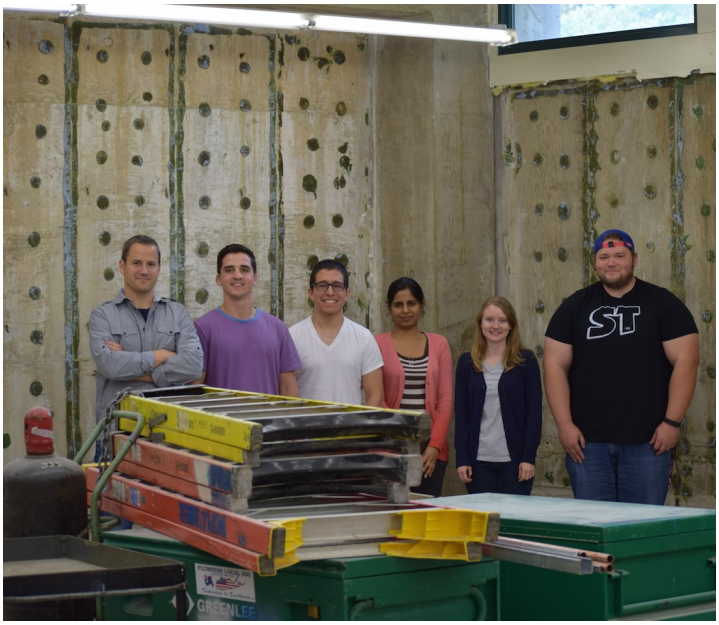
The "bullpen" takes shape.
View from the former microprobe lab looking into Bob Liebermann's former lab.

lot of bumping and thumping. Next was the removal of a long wall separating the microprobe/TEM labs from Liebermann's lab. Cutting windows into the wall separating the labs from the main hallway was the final masonry demolition.

We're now in the midst of active reconstruction, building interior walls and new services to support new lab benches and fume hoods in the analytical spaces and an open "bullpen" where faculty, post-docs, visiting scientists and students will all be able to work and freely interact.

A visit to the link on the Department of Geosciences homepage (*www.stonybrook.edu/geosciences*) will give you some idea of the work that is happening.

We're hoping that construction will be completed during the spring of 2016. Our intention is to host a grand opening event to give people a first-hand look at the Center. Give us your contact information (details on page 3) and we'll be sure to send you an invitation!



Our newest faculty member, Joel Hurowitz (at left) in the part of the rehab that will be his lab. Left to right, he is joined by Mike Thorpe, Don Hendrix, Jasmeet Kaur, Renee Schofield and Seth Gainey.

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The Earth and Space Sciences\Geosciences Photo Archive Project

Images are powerful! Whether it shows a field trip you participated in last week or one from 30 years ago, an image can evoke powerful memories. During our recent celebration we had a slide show of over 500 images, from our first 50 years, provoking lots of recollections (and laughter). Visit our homepage (http://www.stonybrook.edu/geosciences/) to see them yourself.

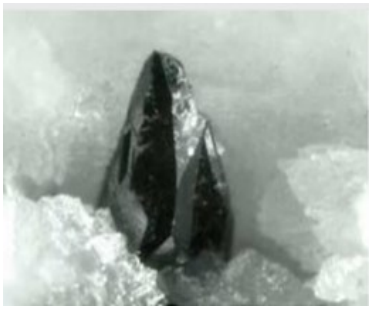
The slide show pictures are only a small part of our entire photo archive which stands at 36 GB and is still growing! For the sake of simplicity, our archive is housed in Google Drive (Google's cloud storage). If you would like to have access to the entire collection please send an e-mail to Owen.Evans@Stonybrook.edu and he will arrange it.

Chances are you'll find too few pictures of yourself and your friends. Help us correct that! We would like to grow our collection by having you contribute any pictures from your time in the department, including any of you and your colleagues beyond the bounds of the lab and classroom. Those memories are also priceless and your contributions will no doubt be widely appreciated by your friends and us. If you'd like to contribute images, let Owen know and he'll create a folder that you can upload to and provide assistance as necessary.

Our Three 'Ites

Throughout its distinguished half-century of history, our department, its students, and its faculty have earned many accolades for excellence. One of the less well-known ways in which members of our faculty have been recognized is through the naming of minerals in their honor. Our total reached three when the Commission on New Minerals, Nomenclature and Classification of the International Mineralogical Association approved the name liebermannite for a new mineral, joining lindsleyite and reederite. Let's take a brief look at these three members of our department and their minerals.

Born in 1934, Don Lindsley earned his bachelors degree at Princeton in 1956 and his Ph.D. at Johns Hopkins in 1961. He joined the department in 1970. His work on the petrology of basalts has proved to be extremely influential in lunar, as well as terrestrial, geology. Among his many awards and honors was when a new Ba chromium-titanite mineral was named *lindsleyite* in his honor in 1983.

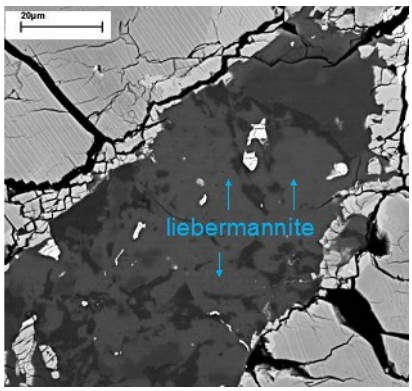


Lindsleyite, $(Ba,Sr)(Ti,Cr,Fe,Mg)_{21}O_{38}$, is a hard (Mohs hardness 7.5) dense (r=4.63) black mineral with no cleavage, a metallic luster and a grey streak. Although Don is anything but dense, it would certainly be fair to say that he has brought great luster to the department and his hair has a grey streak! Although Don continues to be a very active presence around the department since his alleged retirement in 2004, his mineral is found only in kimberlite and peridotite nodules, and its type locality is at Kimberly in Cape Province, South Africa.

Rich Reeder graduated from the University of Illinois in 1975, and he joined the department right after he earned his Ph.D. from Berkeley in 1980. His research interests are broad, encompassing areas of geochemistry and mineralogy ranging from carbonate mineralogy to mineral-water interactions and environmental geochemistry, the effects on lung health of particulate matter and the chemical speciation of heavy metals. His contributions were honored by the naming of a new sodium rare-earth carbonate mineral, *reederite*, in his honor in 1994.

Reederite, $Na_{15}Y_2(CO_3)_9(SO_3F)Cl$ is a soft (hardness 3-3.5) hexagonal sodium rare-earth carbonate containing a fluorosulfate anion, with vitreous luster and a white streak, perfect cleavage, and a density of 2.91. It can be found as small blocky yellowish-brown grains and its type locality is at Mont Saint-Hilaire in Quebec.

Bob Liebermann did his undergraduate work at Caltech, when he was also quarterback of a football team that served as a breeding ground for geophysics luminaries including Tony Dahlen, Rick O'Connell, David Hewitt and Leon Thompson as well as Bob. After graduating in 1964 he went to Columbia University, where he earned a Ph.D. in 1969. Since coming to Stony Brook from Australian National University in 1976 Bob received numerous awards and held a variety of research and administrative posts. With his formal retirement last year he transitioned from Distinguished Service Professor to Research Professor. Around that same time a new mineral, *liebermannite*, was named in his honor.



Liebermannite is described as a shock-produced potassic *hollandite*-type high-pressure modification of $KAlSi_3O_8$ that was identified in the heavily shocked basaltic Zagami meteorite by Chi Ma and colleagues at Cal Tech and UNLV. That 18 kg meteorite, which landed in 1962 just a few meters away from a very surprised Nigerian farmer in his field, is a shergottite, a member of a class of meteorites that originated on Mars and was blasted off its surface by an asteroid impact.

Our faculty and alumni have accumulated a wide range of honors and distinctions over the years. Among the least widely known of these are "our three 'ites".

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