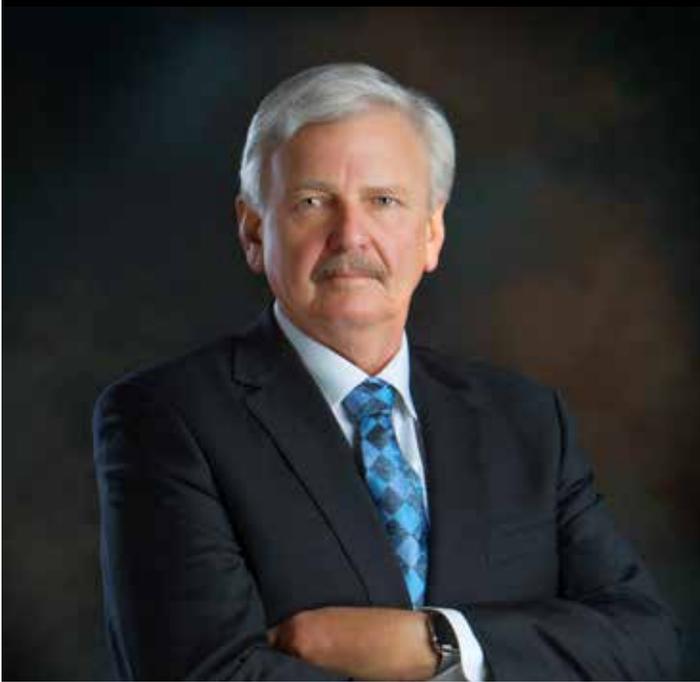


## A word from the president



*Dr. Stephen G. Wells, President*

Dear Honored Alumni:

I have said it before, but my feelings about the quality of our New Mexico Tech alumni bears repeating: You are one of the most remarkable assets we have. I look forward to working with you individually as opportunity allows – and through the New Mexico Tech Alumni Association.

New Mexico Tech truly is an outstanding gemstone, one that the world deserves to know about, and as President, part of my job is to spread the good word about the Institute, the innovative research conducted by its faculty and students, and its stellar list of alumni.

And while we can celebrate our past achievements, we must recognize and nimbly respond to new challenges facing New Mexico Tech and other institutions of higher learning in our state and nation. As President, my role is to advance New Mexico Tech along an evolutionary trajectory that started in 1889, by nurturing it in accordance with its mission, the tenets of its Strategic Plan and with support from the Institute's many constituents.

Allow me to briefly illustrate some of the steps taken along this evolutionary trajectory in my first 100 days as your New Mexico Tech President.

By the end of the year, I plan to visit all academic and key administrative offices and service centers for a better understanding of the campus, and to open the door for

enhanced communications with the Office of the President. This goal includes completely revamping the University's website to help us create a new public face. Division leaders also are developing metrics to effectively capture the operations of their administrative and academic units to serve as a baseline for measuring improvements and driving evidence-based decision-making.

We are building collaborations as a Community of Scholars, as evidenced by two new Ph.D. programs at New Mexico Tech thanks to the joint efforts of many campus constituencies. As a result, the University will produce Ph.D. students in Biotechnology and Mechanical Engineering in Intelligence Energetics for the state's advanced STEM workforce.

One of my primary goals is to seek new revenue sources in support of our teaching and research mission by establishing stronger partnerships with industry in-state and nationwide; by working with and enhancing our Advancement Office; by creating an infrastructure that actively supports philanthropic giving to the University; by strengthening our relationship with alumni; and by supporting faculty and student entrepreneurial endeavors.

Supporting student success lies at the very core of our mission, and is embedded in our institutional goals. Collectively, my administration is devoted to a process of continually improving and enhancing student support services, allowing for improved retention and graduation rates, as well as the overall campus environment. Our institutional ethos will reflect the highest level of integrity and ethics to serve as a model to all students.

New Mexico has a flagship university, within which reside my proud roots in higher education. However, New Mexico is very fortunate to have and be known for another kind of ship. It is a unique, nimble and specialized vessel that will take students on an exciting voyage of inquiry, inspiration and innovation.

We are Techies, and we are New Mexico's Starship. Welcome aboard, alumni. It's going to be a great ride.

A handwritten signature in black ink, appearing to read 'S. Wells', written in a cursive, flowing style.

Stephen G. Wells, *President*



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*New Mexico Tech is an equal  
opportunity/affirmative action  
institution.*

inside

# GOLD PAN

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Joseph A. Fidel  
Student Services Center

# student research

phillip fasano

Phillip Fasano came to New Mexico Tech to study Mechanical Engineering, but he found himself somewhat diverted his freshman year: He signed up for Physics 121 with Dr. Dave Westpfahl, and fell in love with the discipline.

Or, as Fasano tells it: “Dr. Westpfahl flipped my entire world.” It should be noted that Westpfahl, a Professor of Physics who joined the New Mexico Tech faculty 27 years ago, enjoys teaching the introductory courses – and students, mostly first-year freshmen, benefit from having core courses taught by a tenured professor who is well versed in pedagogy.

As it turned out, Fasano experienced “a rude awakening” after taking his first Physics exam, and sought out Westpfahl for advice. Westpfahl gave the freshman the standard lecture: Go to class and do your homework. His young charge took that advice and it paid off: Fasano earned an A in the class.

There’s more to this story, of course.

Nineteen-year-old Fasano, a sophomore at Tech, has an elder sister, 23-year-old Michaela Fasano, who earned a B.S. degree in Mechanical Engineering from Tech last year, and is currently working on her master’s at Texas A&M.

Michaela was recruited to Tech by a family friend who is a heart surgeon; and, coincidentally, the man who performed open heart surgery on Westpfahl nine years ago. The surgeon put Michaela in contact with Westpfahl, who sold the young woman on the virtues and value of a Tech education. Michaela took his advice and ended up working in explosives research at the Energetic Materials Research and Testing Center (EMRTC) for two years, in addition to her engineering pedigree in the university’s program with the highest enrollment.

Fasano was one of the students in Dr. Van Romero’s Explosives Engineering 189 class. He was asked to solve a homework problem which involved launching a payload into orbit.

“I had difficulty trying to solve the problem, and decided to consult with Dr. Westpfahl about it,” he said.

Westpfahl encouraged Fasano to solve for the necessary amounts of fuel needed to launch the payload with a three-stage rocket; Fasano did so. Westpfahl then had Phillip present the calculations to Dr. Romero, who in turn asked the student to present his work in front of the class later that evening.

“After that, I became eager to learn more about all the necessary calculations needed to launch a rocket into orbit,” Fasano said.

A few weeks passed, and Fasano would visit Westpfahl’s office with more questions about rockets and wanting to know how to solve the necessary calculations. Westpfahl decided to have Fasano launch a research balloon with sensors and a camera.

After launching and recovering the balloon, Westpfahl had Fasano incorporate adaptive optics into the payload



Phillip Fasano

the balloon carried. The maximum height the balloon reached was an astonishing 105,000 feet.

“Dr. Romero was very impressed,” Fasano said. Fasano likes doing the math needed for orbital mechanics. “I like to solve application calculations for orbital mechanics,” he said. “There’s so much you can do with physics and engineering.”

The sophomore has applied for a government internship to continue his research into rocket science and the mechanics of flight.

And, at Westpfahl’s recommendation, Fasano has added to his course of study a minor in physics to go along with a mechanical engineering degree.

Quite a payload!

# president's golf tournament

2016



The 23rd Annual President's Golf Tournament held September 15th and 16th was a huge success. Thank you to our major sponsors, team, hole and co-hole sponsors and all the volunteers.

Because of you and your support, over \$160,000 was raised with the proceeds benefiting the President's Scholarship Fund.

Over the years, the President's Scholarship Fund has helped 357 students finish their degrees. Tech has distributed more than \$639,000 in scholarships to those 357 students. The tournament has raised more than \$3 million over the history of the tournament, meaning this scholarship fund will remain healthy and helping Tech students for many years to come.

The tournament kicked off with a VIP flight on Thursday, September 15. VIPs were treated to a private reception with President Wells in the evening. Friday featured two flights – in the morning and afternoon. All golfers were treated to lunch at the golf pavilion and a dinner at Macey Center. The top finishers in each flight earned prizes, mostly donated by sponsors. Many other prizes are given away by random drawing. Golfers were also treated to gourmet snacks and free drinks as they make their way around the golf course.

# faculty research

dr. michael heagy

Michael Heagy is a man of many talents – one might use the term “polymath”. While he is known for his teaching and research, Socorroans who live near campus can often hear him practicing his bagpipes on weekends. Heagy maintains a small fleet of classic European cars and runs them in an annual charity event, Rally Puerto Seguro, he organizes for Socorro’s day-shelter. In addition, Heagy also presented a riveting public talk last year about the history of university research in America.

Heagy first discovered a love of chemistry as a freshman at Franklin & Marshall College in Pennsylvania. His undergraduate advisor, Dr. Ronald Musselman, recognized Heagy’s interest and aptitude and invited



Dr. Michael Heagy

him to join his research group. Heagy began his chemistry research as a Hackman Fellow during his second semester in college, eventually co-authoring three publications.

“I still love the name of the instrumentation and the technique (Musselman) developed – single crystal polarized specular reflectance spectroscopy,” Heagy said. “That was the spectroscopy he developed. I learned a lot of chemistry and physics. It was theoretically challenging and we published three papers in the ACS Journal, Inorganic Chemistry.”

Heagy guides an impressive level of research in the Chemistry Department. In fact, he was awarded the Distinguished Researcher Award at commencement in 2014. The breadth of his expertise has been demonstrated by the range of funding agencies with which he has been successful, including the National Institute of Health, the National Science Foundation, the Department of Energy and the American Chemical Society’s Petroleum Research Fund. Unlike most chemists who

publish in one specialized area of chemistry, Heagy has published in high-impact journals for Organic, Inorganic, Analytical, and Materials Chemistry. As a professional and personal goal, he’s looking to check the Journal of Physical Chemistry off his list.

Heagy also still enjoys teaching undergraduate-level chemistry classes, including General Chemistry, Organic Chemistry and Inorganic Chemistry.

“I like switching gears,” he said. “I try to include research topics in the entry level courses to keep it interesting.”

After finishing his bachelor’s, Heagy traveled west for his doctoral degree to the University of Southern California (USC), where he joined the research group of Dr. George Olah. In Heagy’s fourth year with the group, Olah was awarded the Nobel Prize in Chemistry

“What attracted me to his research was an undergraduate term paper I wrote on super-acids,” Heagy said. “I got an A- on it and I held on to it. I put it in his mailbox and said, ‘I’m

interested in your research and I’d like to chat about it.’ That opened the doors for me and within a week he called me in and told me that was a good paper for a senior undergrad.”

Olah was known for his work on super-acids and synthesized new organic compounds that would allow a look at reactive intermediaries in stable ion conditions.

“These super-acids are on the order of a billion times stronger than conventional acids – like hydrochloric or sulfuric acid,” Heagy said. “We synthesized new organic compounds that would allow super-acids to let us look at reactive intermediates in stable ion conditions. During my time there, I was isolating these fleeting intermediates and that was the groundbreaking work.” Heagy published three papers as a member of Olah’s group.

During his time in Los Angeles, Heagy met his wife, Virginia Chang, who is also a chemist.

He then went to the Massachusetts Institute of Technology for a post-doc. Heagy worked with another



Michael and his son, Ivan famous chemist, Dr. Julius Rebek Jr., in the area of supramolecular chemistry.

After finishing at Cambridge, Heagy and his wife moved to Socorro after he accepted a faculty position at New Mexico Tech in 1996. Chang finished her doctorate at UNM and is now a full-time instructor at UNM-Valencia. They have two boys ages 10 and 13.

“In a lot of ways, Socorro reminded me of my undergrad years – small school,” he said. “When I interviewed, it was a very welcoming, warm reception and that helped. Certainly the weather reminded me more of L.A. and it was a

nice break from the Boston winter.”

When Heagy joined the Chemistry Department, he was the youngster in the group (age 28), and learned a lot about academia and research from his mentors. However, now, 20 years later, he has been on the faculty longer than any of his colleagues in the department.

As a further example of Heagy’s research interests, he developed a fluorescent probe that can quickly detect elevated levels of cardiac troponin in the blood stream. Cardiac troponin is a prime indicator of a heart attack.

“We came up with an abiotic – or synthetic probe – that can detect this protein,” Heagy said. “When the heart isn’t getting blood, the heart cells die and release this protein into the blood stream. That’s proof positive of a heart attack. Time is everything with a heart attack, so the sooner you can diagnose it the better.”

While Heagy has been conducting research on dual fluorescent dyes for a number of years, he recently

started new research into solar fuels.

Olah, his USC mentor, published a book titled “The Methanol Economy.” Heagy is continuing research in that area. He’s a co-lead on a National Science Foundation grant to examine how solar energy can be converted into fuels, as opposed to using solar panels or photovoltaics. And he’s already published on the topic.

“New Mexico is a great place to do this research,” he said. “We have over 3,000 hours of sunlight every year on average. It’s one of our natural resources. We want to expand this to Earth-abundant, non-toxic semiconductor materials,” he said. “Our mantra is ‘Non-toxic catalysts.’”

After winning the



Heagy balances research with teaching

Distinguished Researcher Award two years ago, Heagy presented a broad-scope talk on how U.S. universities transitioned into being the world’s leaders in cutting-edge research.

“I was always interested in the evolution of academic research,” he said. “It’s interesting to me how important research is to any university that wishes to grow.”

In his talk, Heagy first mentioned how Harvard University changed its focus in the 1930s to attract federal research funding that had formerly been the exclusive domain of military institutions. He also mentioned the former Illinois State Normal College and Tempe Normal School as two prime examples.

Those two schools started



Michael playing at the groundbreaking of the new chemistry building as teaching colleges, but transformed themselves into large research-intensive universities – now known internationally as Arizona State University and Illinois State University.

“They became billion-dollar research universities,” Heagy said. “Research drives expansion.”

Given his experience in communicating science, Heagy was selected in 2015 as a spokesperson to visit and meet with staff members of Congress in Washington, D.C., to promote continued support of NSF funding in New Mexico and the U.S.

Heagy is pleased that the Chemistry Department will see a needed expansion in 2017. Thanks to the passage

of a General Obligation Bond during the 2015 election, New Mexico Tech is constructing a new building that will be solely dedicated to the Chemistry Department.

“We’re excited,” he said. “We’re going to have lots of space and very specialized instructional labs. It’ll be state-of-the-art. Tech allowed our department to be involved – from the floor plan all the way up. We’ve had input from the beginning.”

The main floor will have T.A. offices, instructional

labs, stock room, and classrooms (which the department did not have in Jones Hall). The second floor will have faculty offices, faculty and graduate laboratories, a large atrium and nice views to the south.

“Hopefully we’ll see a renewed interest in chemistry,” Heagy said. “It’s nice to see the state making an investment in this area.”

Just a few years ago, Heagy picked up a new hobby – playing the bagpipes. He discovered that local doctor Dr. Johannes Heynekamp was also a player. So he

started taking lessons.

“It’s not for everybody, but I guess I’ve always loved the sound of bagpipes,” he said. Heagy has performed at Convocation, during 49ers, and for the ground-breaking of the new chemistry building. As a member of the Albuquerque Shriner’s Pipe Band, he marches in parades, is all over town on St. Patrick’s Day, and plays at the Albuquerque Celtic Festival.

“I hope some day, Tech will have bagpipes for commencement,” he said. “But that’s a long shot.”

**Alumni welcome!**

# Spring 2017

## Career & Graduate School Fair

**Recruit students: Techies hiring Techies!**

**Find your next job: Meet with employers and universities**

**Host a workshop: Share you resume and interviewing tips**

**Host an info session: Tell students about your company**

**Tuesday, January 31st**      **9:30am - 2:30pm**

# new doctoral degrees to be offered

biotechnology and intelligent energetic systems

pair of new technology doctoral degree programs approved for new mexico tech

Two state-of-the-art doctoral graduate degree programs have been approved for New Mexico Tech, both expected to fill a critical need and to stimulate economic development opportunities in the state's technology sector.

New Mexico's State Board of Finance approved New Mexico Tech to offer Doctorates of Philosophy in Biotechnology and Mechanical Engineering - Intelligent Energetic Systems. The two programs were made available to students in time for the start of the Fall 2016 semester.



Danielle Turner, Tech's first student in its Biotechnology Ph.D. program



## Mechanical Engineering - Intelligent Energetic Systems

The approval concludes a multi-year effort by New Mexico Tech to add the new programs. It is the first time in 10 years that New Mexico Tech has added a doctoral program to its degree offerings.

"These two degree programs hold vast potential for our students that will benefit the state of New Mexico," New Mexico Tech President Dr. Stephen Wells said. "These are two significant Ph.D. programs. There is a tremendous need, specifically in this state, that we can now start to

meet."

Dean of Graduate Studies, Dr. Lorie Liebrock, says both degree programs have waiting lists of students looking to enroll.

"New Mexico has biotechnology in its new strategic plan from the governor as one of our major growth areas, and we have a great deal of biotechnology programs here in New Mexico," Liebrock said. "As an example – of the 600 new jobs at Los Alamos National Lab, 300 are scientist positions, and

a number of those are biotechnology related.

"From our development of extracting minerals using biochemical processes all the way through the development of the nicotine patch, we have a long history of biotechnology research here at New Mexico Tech," she said. Liebrock also sees tremendous growth potential in the Mechanical Engineering Ph.D.

"It's the intersection of systems-thinking with explosives and high-energy

# doctoral degrees

## biotechnology and intelligent energetic systems

systems. So, we're talking about rockets and bomb dispersals, all of that sort of instruction," Liebrock said. "It provides the sort of work needed at places like Spaceport America and Sandia National Labs. It's explosives, defense work and developing intelligent defense systems. That's all related to the new Mechanical Engineering Ph.D."

New Mexico Higher Education Department Cabinet Secretary, Dr. Barbara Damron, and Dr. Bridgette Noonan, Senior Policy Analyst, New Mexico Higher Education Department, presented the Ph.D. in Biotechnology for approval, along with New Mexico Tech's Lorie Liebrock, Dean of Graduate Studies; Tom Kieft, Professor of Biology; and Snezna Rogelj, Chair and Professor of Biology. They were supported by Dean of Arts and Sciences, William Stone.

The Ph.D. in Mechanical Engineering (with Dissertation in Intelligent Energetic Systems) was presented by Secretary Damron, Dr. Noonan

and New Mexico Tech's Kevin Wedeward, Dean of Engineering; Jamie Kimberley, Assistant Professor of Mechanical Engineering; and Andrei Zagrai, Chair and Associate Professor of Mechanical Engineering. "This is really a great moment in Tech's history," Vice President for Academic Affairs Dr. Warren Ostergren said. "Dr. Kieft and Dr. Rogelj from biology and Dr. Kimberley and Dr. Zagrai from mechanical engineering really took the lead with this project and deserve a tremendous amount of credit for the work they've done to make these programs a reality. They developed the programs and had to work out all of the details,

including collaboration with other research institutions and industry."

Although New Mexico Tech is the only university in the state to offer these degrees, collaboration with New Mexico's other two research institutions, the University of New Mexico and New Mexico State University, is part of the plan for each new degree program.

"Once the two programs are up and running, we're going to share courses with these other universities," Dr. Ostergren said. "We have 11 departments on campus that are already set up to support these degrees. All necessary infrastructure is in place to start these programs today."



New Mexico Tech's Mechanical Engineering Department

## rankings



**NEW MEXICO TECH**  
*Best College Value in Public Colleges:*  
*Kiplinger's, 2016*

*Ranked #1 Best Bachelor's Programs for Engineering; Best Value:*  
*USA Today, 2016*

*Ranked #2 in the West for Average Wages of Graduates:*  
*Payscale.com, 2016*

# construction update

october 2016



## chemistry building

The new building for the Chemistry Department is rising from the ground.

Construction is well underway for the 40,000-square-foot building. In May, the Board of Regents voted to name the new chemistry building after retiring President Dr. Daniel H. López. The official

building name will be determined at future Regents' meetings.

Bradbury Stamm Construction began work in March followed in April by an official ground-breaking ceremony. The old Bureau of Geology building was razed to make way for the new two-story chemistry building which will sit just south

of Workman Center. The Fidel Center parking lot was torn up, repaved and reconfigured over the summer.

Work will continue throughout the fall 2016 semester, with the building to be enclosed by November. In the traditional fashion of New Mexico Tech architecture, the building will have a

stucco façade with a red tile roof. The interior is expected to be finished by February 2017, and the department plans to start moving in during March. The official grand-opening is projected for August or September of 2017.

The first floor of the building will include eight labs, a stock room, graduate student offices,

one large classroom and a vast common area for studying and lounging. The second floor will include 14 more labs, 14 faculty offices, a conference room, a computer lab, a smaller common area and a faculty lounge.

The building is funded through a \$15 million General Obligation Bond approved by New Mexico voters during the 2014 general election.

### data center

The next capital project on campus will be a new data center, which will give Tech a centrally located building for information technology, particularly servers. McClain + Yu Architects have begun meeting with ITC to determine the exact requirements of the building, which will be located to the south of Facilities Management near the existing greenhouse. The data center project is funded by \$2 million of severance tax funds.

Tech's current data center is out of capacity. All the

servers on campus will be consolidated at the new center, helping with maintenance costs, cooling costs and other utilities. Ground-breaking will take place in early 2017, with a completion date projected for late 2017 or early 2018.

### jones hall

The next item on Tech's priority list is the refurbishing of Jones Hall; mainly the HVAC systems along with a new roof. This \$5.5 million project will be on the ballot of the November 2016 general election as "Bond C."



Artist's rendering of the Magdalena Ridge Observatory Interferometer

### magdalena ridge observatory interferometer

New Mexico Tech will also be asking the state for \$8.5 million to purchase more telescopes and infrastructure at the Interferometer. The facility atop the Magdalena Ridge installed the first telescope (without mirrors) in May 2016. Tech also has a contract for \$25 million with the Air Force Research Laboratory to install telescopes. Ultimately, the facility will feature 10 telescopes and will be capable of producing images 100 to 200 times the resolution of the Hubble Space Craft

– at a fraction of the cost.

### wellness center

Tech expects to be on the 2018 general election ballot requesting funds for a new Wellness Center. This building would be about 60,000 square-feet and include all the amenities of the existing gym, as well as an indoor pool and other offices and recreational areas. This proposed project would cost about \$15 million, with half of the funding coming from a General Obligation Bond and half from the university.

### chiller plant

The next priority on Tech's construction list is a new chiller plant for the south side of campus. Tech plans to request funds during the 2020 general election.

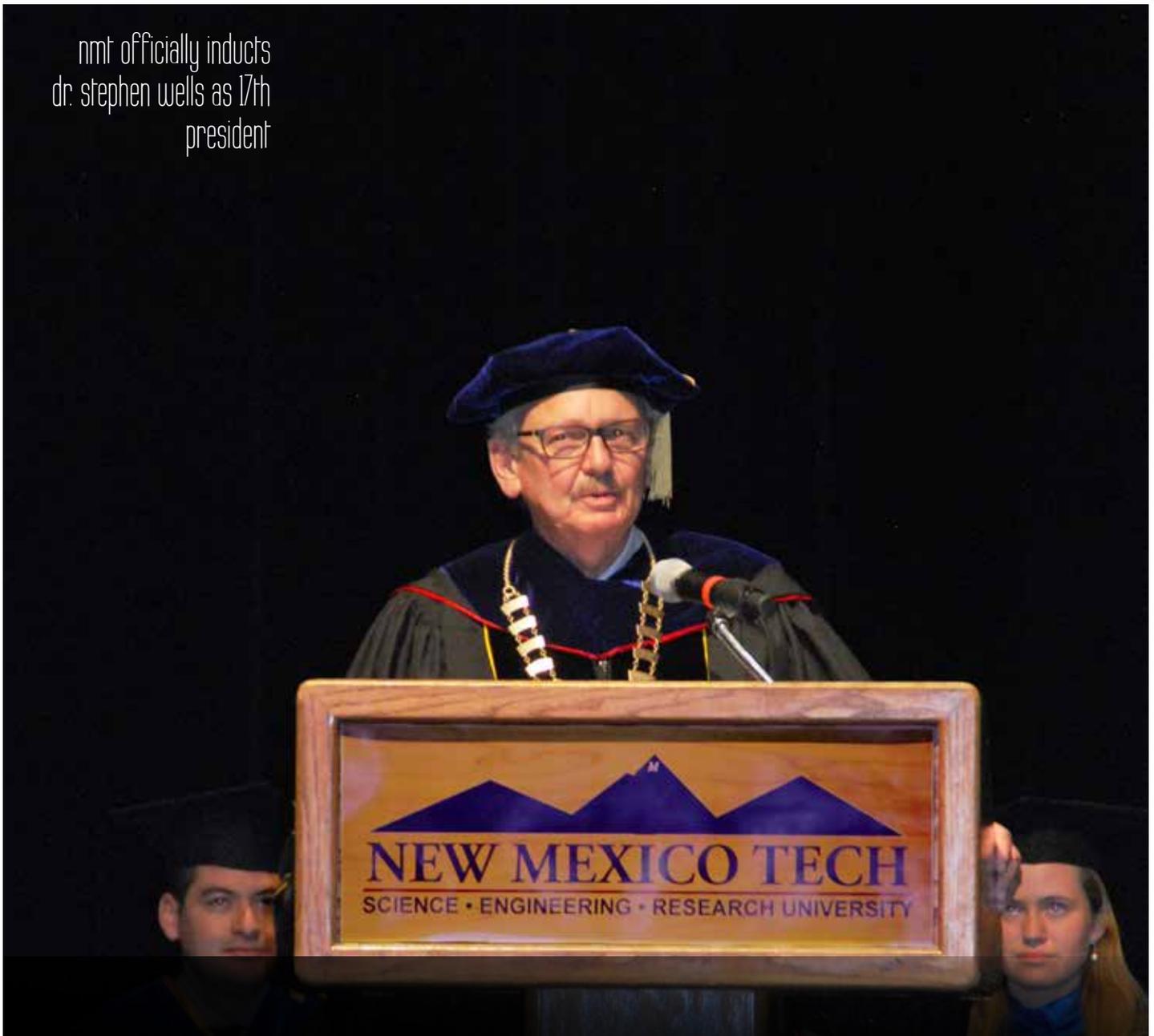
### brown hall

The university's final capital project priority is a complete renovation of Brown Hall. This project is expected to cost around \$6 million.

# presidential induction

dr. stephen wells

nmt officially inducts  
dr. stephen wells as 17th  
president



New Mexico Tech inducted the 17th president of the university on October 7, officially marking the tenure of Dr. Stephen G. Wells.

Dr. Wells took over in July, upon the retirement of former president Dr. Daniel H. López, who had served as president for 23 years and who was present for the event.



University faculty in full regalia, staff and students, as well as community members and officials from other universities, congregated at Macey Center on campus. In introducing Wells, Board of Regents President Deborah Peacock

presented him with the presidential medallion, which includes the names of all 17 university presidents, flanked by the other four members of the Board.

President Wells accepted the medallion “with pride and humility” as a symbol

of executive leadership and authority.

Joining her husband at the podium was Bethany Wells, who President Wells thanked for her strength, enduring support and boundless patience. He also expressed his delight in sharing the singular moment with his mentor, Dr. Laurence Lattman, who was Wells’ graduate school advisor in the 1970s at the University of Cincinnati.

Lattman, who served as the 15th president of New Mexico Tech, provided a keynote talk during the induction, noting that New Mexico Tech is in good hands. He recounted Wells’ career achievements and praised his leadership skills. He said that Wells,

in addition to being a brilliant scientist and natural leader, is also delightful, charming, calm and doesn’t get rattled.

“Tech will move forward at full speed under the leadership of Steve Wells,”





Dr. Laurence Lattman

Lattman said in closing. Soon to celebrate his 93rd birthday, the former president, known as an exceptional public speaker, proved he hadn't lost his touch, by delivering a keynote speech flecked with classic

Lattman humor. He was accompanied to the event by wife Hanna.

Wells opened his address by pledging to be the university's "Miner-in-Chief," saying he will polish the gem that is New Mexico Tech. He spoke at length about the university's Strategic Plan and how he will spearhead



Dr. Frank Etscorn

the campus-wide effort to build the university.

As part of his pledge, Wells avowed to collaborate with all constituencies of New Mexico Tech to sustain and enhance its mission of providing the highest quality of educational experience to Tech students; to grow the breadth and quality of our research endeavors, to realize more perfectly the ideals to which the university is committed; and to demonstrate the

extraordinary value of New Mexico Tech, often said to be the best-kept secret in the state.

Wells, who was a professor at the University of New Mexico for 15 years, said that the state has a flagship university in UNM, but has another ship that is a unique and nimble vessel. "We are New Mexico's starship," he said to close his address. He then led the recessional as the New Mexico Tech Chamber Orchestra played the theme from Star Trek.

The university then hosted an outdoor dance and dinner to celebrate the occasion.

The Induction celebration that followed the ceremony was kicked off with a toast from Dr. Frank Etscorn, professor and former Dean of Students.

The celebration was full of smiles, laughter, and dancing. The Mose McCormack Band entertained the crowd, with Dr. Wells, administrators, faculty and alumni livening up the dance floor.



President Wells acknowledging Frank Etscorn's celebratory toast



# people are saying...

*weekly alibi*

## *brehtaking bombs new mexico tech destroys to build*

“This is my first car bomb!” I say excitedly to the young, blond boy standing to my left. His cornflower blue eyes widen and he replies, “This is my first any kind of bomb!” We smile at each other—big, giddy, childish grins of the sort that can only come from blowing something up. We’re in a shelter 2,500 feet away from a test pad at New Mexico Tech’s Energetic Materials Research and Testing Center (EMRTC) in Socorro. Sitting on that seemingly far away test pad is a battered and decrepit Ram truck peppered with splotches of rust and 300 pounds of ammonium nitrate plus two neon green explosive boosters lying in the truck bed. The ammonium nitrate is a commercial explosive and takes the form of six brown paper sacks of tiny white pearls. A school bus of kids, a van of local journalists and I are minutes away from witnessing the detonation

of a car bomb as part of an education and media day—apparently Tech no longer wants to be the state’s “best kept secret.”

Earlier in the day, we learned about the type of work that Tech and EMRTC perform for both the government and commercial enterprises. While Tech has a lot to do with education, being one of the top universities

for first responders, SEAL teams and Special Ops forces. The condensed version is that they “serve national interests” through research, development, testing, evaluation and training, as well as acting as the nation’s only university to do testing of such a magnitude. The main question they seek to answer is: What are the effects of new mathematical and

member, you can pretty much set your watch by the regular explosions in the mountains just west of Socorro. A ring of gray dust ripples out from the test site and thick grey smoke mushrooms up, boiling hundreds of feet into the air. It seems too quiet, then I hear a sharp crack and the drumming of thunder barreling up toward the shelter. The shock wave roars through us—taking my breath away and making my ears pop. The bearded journalist next to me barks out a surprised curse word.

When we were young, my cousins and I used to love blowing up anything we could get our hands on with red M-80s and strings of Black Cats, so this sounds like a blast (get it? haha), but one EMRTC employee says that after a while, the explosions are just another day at work. The bearded journalist next to me, just as excited as the children, dismisses such apathy, muttering, “What the hell am I doing in journalism when I could be doing this?”—he nods toward



Bombs Over Renee, by Rob M

in the US—particularly for their engineering program—EMRTC offers a range of services from ballistics, ordnance and curtain wall reaction testing to computer simulations to training

technological threats on people and national assets? So while this is all very serious scientific stuff, it also happens to be a great excuse to rain destruction in the mountains—a lot. According to a Tech staff

the soon-to-be-scrap-metal truck. The idea of witnessing the detonation of a car bomb is exciting enough, but on the bumpy ride into the 42-square miles of test land comprising 75 specific test sites, our imaginations have been amped up as we passed bits of aircraft that have been annihilated and dusty tanks waiting for their next target.

A call goes out for quiet, “Stand by for count! Five! Four ...” We all stare out the tiny, thick glass windows, and I feel a nudge of surrealist disappointment that I’m not actually watching the real thing—rather, I’m watching a reflection of a reflection of the real thing. I’m looking at a mirror that blocks my view in case of rogue debris. Clearly this precaution is not for nothing as I note a few cracks and scratches in the large squares of glass. The countdown continues, and we all chant the numbers, staring intensely at the tiny speck that is our vehicular victim. “Three! Two! One!” We see the explosion first, a fiery golden ball

of energy that is gone in a flash, then everything seems to slow down.

The kids scream. Then it’s over, and all that’s left is a quickly dissipating nebula of haze.

On the test pad, I expect to see burning wreckage, but there is nothing. Lying in the dirt are a few larger chunks of the retired truck, but that’s it. I feel oddly empty now that it’s over, but I imagine the cells in my body crackling and sparking as chaotic energy bounces off the cell walls.

The media van trundles back down to the test pad and the full effect is now visible. As soon as I step out of the van, I note the change in the earth beneath my feet. There is a fluffy layer of soft, powdery dirt, and my footprints stand out on the newly settled ground. The buzz of cicadas drones in my ears. I take in the particles of twisted metal entrails that are strewn about, reaching 200-300 feet into the surrounding hills. A shallow crater testifies to where the

truck once was, and 20 feet away from it is all that remains—a modern sculpture, a pretzel of pipes, an axle and the engine block. I realize how silly the action movies are with beefy heroes who never turn back to look at explosions.

More importantly, I realize how very far removed my experience is from the lives of people in war-torn areas the world over, where bombs like this go off all the time, with no safety bunkers or mandatory 2,500-foot boundaries. There are crumbling cities in Syria and Iraq where car bombs elicit fear in children, not excitement. Staring out at the shrapnel littering the dirt, I feel an unnerving mixture of sadness and gratitude, because about 7,000 miles away, someone else in the Middle East is probably looking at the same view, but for a whole different reason.

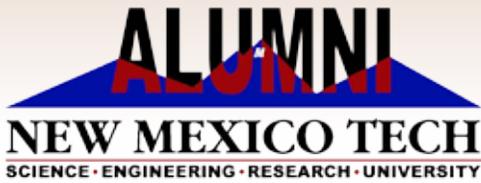
This homeland sure isn’t perfect, but I just got to witness the awesome destructive powers of a bomb, the study of which

will be used to save lives rather than demolish. In researching air blasts from explosions, EMRTC is creating a generic curtain wall to protect embassies and the lives of those who are working to spread peace and cultural understanding. In a true show of better living through chemistry, they are creating paints that will bolster substandard buildings in foreign countries so as to withstand the pressure of bombs without crumbling and killing those within. They are preparing paramedics and police to understand bomb situations so as to both keep themselves safe and properly treat bombing injuries. On top of all that, through interaction with children on educational outreach days like this, Tech and EMRTC are constructing the dreams of future scientists in New Mexico. Now, that’s the bomb!

*By Renée Chavez*  
*Weekly Alibi is Albuquerque’s free news and arts newspaper since 1992; for back issues and more alternative voices, go to [www.alibi.com](http://www.alibi.com).*

# alumni association news

a letter from your alumni association



Alumni and Friends of New Mexico Tech:

The fall season is a great time. It is when we begin to reflect on what has happened up to now while looking to the future of a coming new year. Sometimes you can almost smell the change in the air. This year at New Mexico Tech's 49ers celebration, it was a merging

of the familiar with the new. Exciting changes are in store at New Mexico Tech and the New Mexico Tech Alumni Association (NMTAA).

Amidst the 1966 and 1991 class reunions, Tech Alumni reconnected at events like the traditional 49ers Day Parade and the SPE Gold Rush Golf Tournament. We gathered at the final performances of the Vigilante Band at the Capitol Bar, ending a 40-year-long 49ers tradition. The NMTAA worked to reintroduce events such as the ore cart races and the Swedish saw competition. The 5th annual Victor J. Saracini Fundraiser for student scholarships was a great success. A reunion of Techies over the decades was held with a live auction to support an alumni-sponsored lab for the chemistry building currently under construction. These events are a nod to our past with an eye toward a bright future.

The NMTAA Board of Directors and the new Tech President, Dr. Stephen Wells, met during 49ers to become acquainted and discuss the short and long-term goals of each organization. At the heart of the discussion, both recognized that building relationships between Tech, NMTAA, and the students and alumni will create long-lasting value for the institution. As NMTAA continues to grow as an independent 501(c)(3) entity that serves the alumni membership, we look forward to

exploring partnerships with Tech to benefit current and future alumni. The alumni association wishes Dr. Wells the best in his new role as New Mexico Tech President and we welcome working with him and his staff.

Looking ahead in this next year, there is much to accomplish within the New Mexico Tech Alumni Association. Obtaining 501(c)(3) non-profit status and a Memorandum of Understanding for overall interaction with New Mexico Tech is just the beginning. Now NMTAA can focus on growing its membership, establishing short and long-term goals for meeting alumni needs, and fostering a sense of community and belonging. But the NMTAA officers and board cannot do it alone. We need your help.

I invite you to follow NMTAA on Facebook and LinkedIn (search for "New Mexico Tech Alumni Association"). Please re-visit these sites often for updates on alumni news and events, and don't hesitate to add comments or post links of interest to the group. Consider becoming a NMTAA dues-paying member and being more involved, like contacting the association to serve on a committee or to simply ask questions. And, of course, we would love for you to contact us at [alumni@nmtaa.org](mailto:alumni@nmtaa.org) to let us know of any changes in your life.

The role of NMTAA President is an honor because of the opportunity to represent you. You are Tech alumni, regardless of graduating year or only having completed one class at New Mexico Tech. We have a shared experience, community, and mindset. We are Techies.

Sincerely,

A handwritten signature in blue ink that reads "K Silsbee".

Kenneth Silsbee, M.S.

*President, New Mexico Tech Alumni Association  
(Class of '89, B.S., Technical Communication)*

# where are they now

nelia dunbar

New Mexico Tech alumni continue to advance in the world of science and engineering as evidenced by yet another “first”: Nelia Dunbar was recently named the Director of the New Mexico Bureau of Geology and Mineral Resources. She is the first woman director of the Bureau, and 15th overall in its nearly 90-year history.



Dr. Nelia Dunbar

The announcement was made in mid-October by Tech President Dr. Stephen Wells.

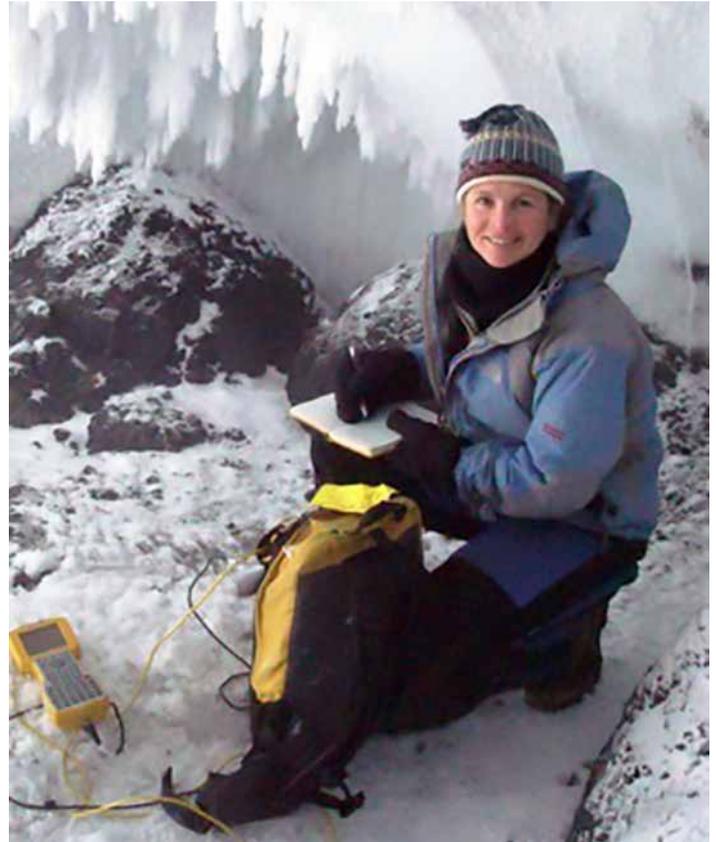
“We’re excited to appoint Dr. Nelia Dunbar Director of the Bureau of Geology and Mineral Resources,” Wells said. “She has done outstanding work for the Bureau for many years and her qualifications for the position are world class.

As a fellow geologist, who is very familiar with what it takes to lead this effort, I’m looking forward to great things for the Bureau and Dr. Dunbar.”

Dunbar has been with the Bureau since 1992. She is a Geochemist who completed both her M.S. in Geology (1985) and Ph.D. (1989) in Geochemistry at New Mexico Tech, and still serves as an adjunct professor in the department. Dunbar succeeds Matthew Rhoades.

“It’s such an honor to be offered this position,” Dunbar said. “There are only a handful of other women in this position in other states around the country. I have a deep loyalty to our Bureau and will do my best to continue to advance the incredible work being performed there.”

Dunbar sees strength in the Bureau’s diversity and the strong sense of collaboration among Bureau staff. “We have a really wonderful staff of smart people working here, who are very



Dunbar in Antarctica

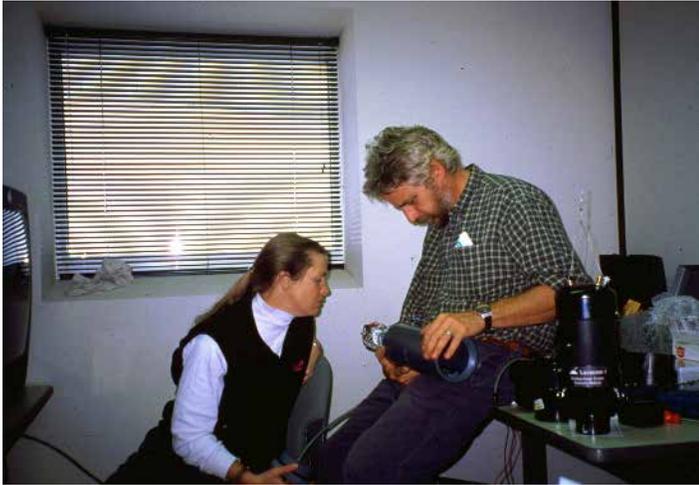
creative and dedicated to understanding the geology of New Mexico,” Dunbar said. “Many of our staff are geologists, and we have many different fields of geology represented. The Bureau is a collaborative organization, and people in the Bureau work together well.”

She also points to the Bureau’s community outreach efforts, particularly with New

Mexico’s public schools, as both essential and critical to the Bureau’s continued success.

“Working with the teachers, interacting with the public, having the museum and bookstore – all help our survey to serve the people of New Mexico,” she said.

Dunbar sees developing new streams of funding and finding ways to preserve the Bureau’s



Nelia Dunbar and Bill McIntosh inspecting a camera

budget as a primary challenge.

“We have to work to find creative ways to increase our funding at the legislative level, which can be difficult in New Mexico’s current economic climate, and to develop other sources of funding,” she said. “It’s really important when we seek other sources of funding that we stay within our mission. We are the New Mexico state survey and we need to focus on New Mexico.”

Dunbar’s M.S. and Ph.D. work converged around explosive volcanism – understanding how volcanoes work. She has done fieldwork not only throughout New Mexico,

but also around the world, including extensive work in New Zealand and Antarctica. Dunbar spent her formative years living around the world, including regions of Africa, but was drawn to New Mexico during a summer geology field camp during her undergraduate studies.

The Land of Enchantment must have made quite an impression; she returned three years later and has been a resident ever since. She and her husband, Bill McIntosh, have lived on a 25-acre farm in Lemitar, just north of Socorro, since 1992.

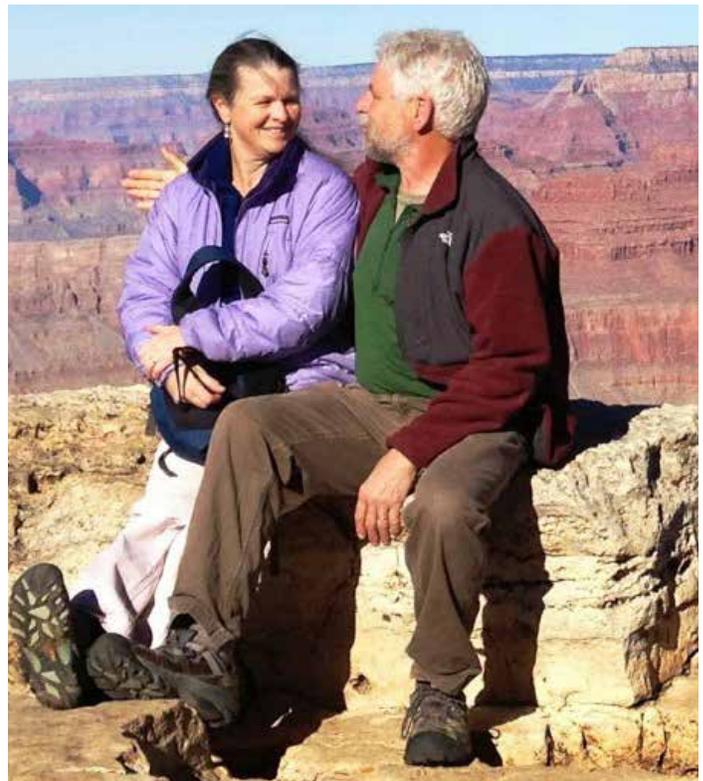
Dunbar was elected a Geological Society of America Fellow, and a New Mexico Geological

Society Honorary Member, both in 2014. She is also a 1998 Mary Lyon Scholar as an “outstanding young alumna” at Mt. Holyoke College, from where she received a BA in Geology summa cum laude in 1983.

The New Mexico Bureau of Geology and Mineral Resources has served as the state geological survey for nearly 90 years. It is a non-regulatory, research-oriented state agency and a division of the New Mexico Institute of

Mining and Technology. Its focus is on fundamental geologic mapping and research in support of responsible resource development for the benefit of New Mexico’s citizens.

The New Mexico Bureau of Mines and Mineral Resources (as it was first known) was established by legislative act on March 14, 1927, as a department of the New Mexico School of Mines (as New Mexico Tech was then known).



Nelia Dunbar and Bill McIntosh

# alumni research

bernadette hernandez-sanchez and vincent urias

## tech grads at sandia garner national awards

Two New Mexico Tech alumni recently received national awards for technical achievements as Sandia National Laboratories innovators. Bernadette “Bernie” Hernandez-Sanchez and Vincent Urias were recognized with 2016 Hispanic Engineer National Achievement Awards Conference (HENAAC) Awards from Great Minds in STEM, an organization supporting careers in science, technology, engineering and mathematics.

HENAAC honors Hispanic researchers who have made significant contributions to the nation’s technical community. Awardees are peer-reviewed and come from a wide range of private industry, academia, military and government organizations.

Hernandez-Sanchez received her B.S. in Chemistry from New Mexico Tech in 1999.

She holds a doctorate in inorganic solid state chemistry from Colorado State University. Hernandez-Sanchez also has been awarded two patents and has published 28 technical papers.

A cybersecurity researcher, Urias earned both his B.S. in Electrical Engineering and an M.S. in Computer Science, both in 2008. He is completing a doctorate in computer science, also at New Mexico Tech. Both Hernandez-Sanchez and Urias were formally recognized at the 28th Annual HENAAC Conference in Anaheim, CA, October 5 - 9, during National Hispanic Heritage Month.

Hernandez-Sanchez, the first woman at Sandia to receive the award, was chosen for her outstanding technical achievement. Urias was named a luminary honoree. While the talents of these two researchers span very different fields of science, their life stories are remarkably similar: Both grew up in impoverished areas of Albuquerque,



Bernadette “Bernie” Hernandez-Sanchez

attended underserved public high schools, started at Sandia as high school interns, and were the first in their families to go to college.

### berna hernandez-sanchez

“The first time I ever met a scientist was when I started my internship at Sandia,” said Hernandez-Sanchez, who is from Albuquerque’s South Valley, where few people she knew went to college.

Today, she’s an accomplished chemist. Hernandez-Sanchez’s technical achievements focus on the morphology, structure and properties of nanomaterials for real-world applications that range from renewable energy to homeland security.

As the principal investigator for Sandia’s Marine Hydrokinetic Advanced Materials program, she has made important contributions to studies of corrosion and other materials challenges for underwater devices that aim to harness clean

energy for electricity. In one project, the career chemist is developing nano-engineered copper-silver coatings to keep microorganisms from growing on underwater equipment. She said the coatings come from techniques she has spent more than 10 years developing in Sandia’s Advanced Materials Laboratory (AML).

Through the New Mexico Small Business Assistance program, Hernandez-Sanchez is helping a Santa Fe company, bioLime, improve the chemistry of stucco, a staple material in Southwestern homes that is prone to cracking as it ages.

In addition, she has contributed to Sandia’s NanoCRISPR genetics project, Laboratory Directed Research and Development (LDRD) program, and to improving the chemistry of lithium-ion batteries and ferroelectric perovskite materials.

Alongside her technical work, Hernandez-Sanchez

has mentored more than 50 interns in her lab, many of whom have gone on to pursue graduate degrees in chemistry. Sonia Mendoza, a chemistry student from Universidad del Valle de Mexico said, “Working with Bernie, I learned to challenge myself and that anything is possible, no matter your background. Bernie taught me to not always trust published work, but to prove things yourself through science.”

In addition to mentoring undergrads, Hernandez-Sanchez works with underrepresented elementary and middle school students to get them excited about science.

“I like to give back, because I look at them and see myself. I understand the importance of being introduced to new concepts and role models in order to encourage student interest,” she said.

Hernandez-Sanchez is the co-creator of CSI: Dognapping – a lively, interactive workshop that shows kids the fun

in science. The program has reached 5,000 local students and was honored by the American Chemical Society with the 2015 ChemLuminary Award for Outstanding Kids and Chemistry.

### vincent urias

Urias was raised by his grandparents, who fled persecution to immigrate to the United States from Guatemala in the 1960s. He said they instilled in him a love of the United States and the value of service. Speaking about his grandmother Josephine today, Urias said, “I can’t slow her down. She is in her 80s, volunteering four days a week in a first-grade classroom and walking to work every day.”

Urias, too, is a non-stop force of energy. He has achieved notable success in Sandia’s cyber defense programs, supporting national security for partners, including the Department of Defense.

His research includes large-scale cyber modeling and simulation environments at Sandia, called



Vincent Urias

Emulytics, for testing of vast enterprise software systems. From that work, a patent was issued for an improved cybersecurity technology. Urias also has led or contributed to 12 LDRD projects, several of which aided the Emulytics research.

“To be able to perform this type of testing before deploying software systems was a capability missing from the software engineer’s toolbox, until now,” said his manager,

David Duggan. “Vincent is the visionary and driving force behind these innovations.”

Urias has mentored more than 25 undergraduate students at Sandia. “He’s got an infectious attitude and an outstanding work ethic that students can see and want to emulate. He enables them to want to learn and do more in this field,” Duggan said.

Outside of work, Urias volunteers at the

Albuquerque-based National Hispanic Cultural Center to encourage minority students to pursue STEM education. He also serves as stewardship chair of the United Way of Central New Mexico’s Hispanic Philanthropic Society, designing strategies for investments in local middle school youth.

Urias said his advice to underserved students interested in STEM careers is, “The curriculum is

going to be hard, but just do it. You can succeed.”

Urias grew up in the low-income sector of Albuquerque known as the International District. In a neighborhood occupied with gangs and drugs, his grandfather Alfred drove him to and from school every day, and retired “to focus on taking care of me,” said Urias. “He thought it was a big job.” Urias credits his drive to his grandparents, who taught him never to stop trying, and not to fear failure.

At age 15, Urias got a job at Sandia as an intern-level tech in the computer support unit. He attributes his success to the mentors he still calls his “adoptive parents” – Susan Sackinger, his first supervisor at Sandia, and her husband, Phil, who mentored him in Sandia’s Engineering Science Center.

“I did not even know I was going to college until I came to Sandia,” said Urias. “Being exposed to the talent, the technology and the people here changed my life.”

# alumni receptions

Conviviality set the scene for this year's annual 49ers Celebration, New Mexico Tech's version of homecoming weekend. Alumni who hadn't seen each other for some time had the chance to get reacquainted, particularly at the informal alumni receptions held at the home of President Stephen and Bethany Wells.

The weather was quite hospitable, albeit a bit breezy, somewhat unusual for mid-October, but perfect for parades, picnics and memories.



Renewing old friendships...



...and creating new ones

See you next year!



*Class of 1966 L-R, Back Row: Alvin Jones, Richard Hartman, Celedon Aragon, LeRoy Eidi, Louise Chamberlin, Mike Kowazski, Verlean McCoy. Front Row: Earl Shortridge, Gary Morris, Doug Smith*



Beth Wells introduces Taz, the cockatoo to Tech alumni



Anita Gleason and others from the Class of 1991 attended the reunion luncheon

Graduates celebrating their 25th and 50th reunions shared the spotlight with younger alumni, and enjoyed an auction to generate funds for the Alumni Chemistry Lab.



President Wells and Tessa Guengerich, Tech co-op student working at Los Alamos National Labs

convention receptions

- December 13, 2016  
AGU Fall Meeting in San Francisco, CA
- February 2017  
Tucson Gem and Mineral Show
- February 21, 2017  
SME's 2017 Annual Conference & Expo

special events

- President's Club Dinner  
April 2017

fall/winter receptions:

- Arizona  
Tucson and Phoenix (Tucson Gem and Mineral Show)
- Maryland  
Baltimore, Bethesda and Washington, D.C
- Nevada  
Reno and Elko
- New Mexico  
Silver City, Roswell, Artesia, Carlsbad, Las Cruces, Santa Fe
- Northern California  
San Jose and Sacramento
- Oklahoma  
Oklahoma City and Tulsa
- Texas  
Dallas/Ft. Worth,

Houston, Midland, and Lubbock

spring receptions:

- Colorado  
Durango
- New Hampshire  
Portsmouth
- New Mexico  
Farmington, Socorro, Albuquerque
- New Jersey  
Princeton
- Pennsylvania  
Philadelphia
- Southern California  
San Diego, Huntington Beach, Ridgcrest

alumni reception list

*Please join the Office for Advancement and Alumni Relations for networking receptions in a city near you or at an upcoming conference. Check our webpage <http://www.nmt.edu/advancement> or follow us on Facebook: **New-Mexico-Tech-Alumni-Interaction** for all announcements on dates, locations and times. Please keep your address and email up to date with us; email [Alumni@admin.nmt.edu](mailto:Alumni@admin.nmt.edu) to update your contact information.*

# Homecoming



49ers Gold and Silver Jubilee Opening Bonfire on Thursday night



Dr. Michaelann Tartis spoke at TECH Talks



Students won the Black and Blue alumni match for the first time since 2009



The Vigilantes said goodbye on the 120th anniversary of the Capitol Bar



Dr. Lorie Liebrock with Toyabe (L) and Carmello (R)



Paint the M



# 49ers 2016



First State Bank entry with Holm and Quatro Bursum

The 2016 Annual 49ers Parade lined up on Saturday morning with a wide variety of entries including student clubs, faculty and staff, horseback riders, car clubs, police and fire departments, community entries and even the Socorro High School Marching Band led by director David Olander. A special thank you to the participants and folks who came out to watch and support another successful 49ers Parade!

## PARADE RESULTS

**Grand Champion:**  
Student & University Relations



Thresa Kappel with the SUR Grand Champion trophy

### Float Category:

1. NMT EMRTC
2. Class of 1976
3. Graduate Studies

### Vehicle Category:

1. Socorro Old Car Club
2. Grand Marshals:  
Dr. Steven & Beth Wells with State Representative Don Tripp
3. First State Bank

### Animal Category

1. Dr. Lorie Liebrock
2. Color Guard/Clint and Cathryn Wellborn

### Club/Organization:

1. SHS Marching Band
2. International Students
3. NMT Street Hockey



Student and University Relations

# alumni spotlight

dr. robert balch

Robert S. (Bob) Balch, a native of Washington State, grew up in the Pacific Northwest, but had to come to New Mexico – and New Mexico Tech – to discover his life’s work.



Dr. Robert Balch

The year 2016 has been a significant one for Balch. On July 1, he was named to succeed Robert Lee as Director of the Petroleum Recovery Research Center (PRRC). Then, in September, Balch was notified that he had been selected for the “Distinguished Lecture Series” sponsored by the Society of Petroleum Engineers (SPE).

“That was certainly a capstone moment of my career,” he said.

The title of the talk he will deliver on the SPE tour

is “The Intersection of Environment and EOR: How Carbon Capture is Changing Tertiary Recovery.” Those chosen for the program can expect to travel to as many as 40 places worldwide, on tours that last for a few days or as long as two weeks.

“As a researcher, the distinguished lecture tours are a great way to introduce your research to thousands of people – it really raises the profiles of the speakers,” he said. Being chosen for the Distinguished Lecture Series is a lifelong honor.

Balch explained that presentations can be scheduled thousands of miles apart, or sometimes are clustered around a specific region, such as the Middle East, where a presenter will deliver 5-6 talks within a geographic region during a single tour.

Balch’s tour as a distinguished lecturer will take place over a cycle that begins in September 2017 and ends in June 2018. Individuals are nominated by their peers. Each nominee then sends a slide presentation

to the SPE Selection Committee, which evaluates the presentations, and the qualifications of the nominees, reducing the pool to a smaller group. “The remaining nominees then get to give a presentation before the SPE Selection Committee,” Balch said.

SPE chooses a select number of these nominees to go out on tour as members of its Distinguished Lecture Series.

He completed his Ph.D. in Earth and Environmental Science with Dissertation in Geophysics at New Mexico Tech in 1997 under advisor Dr. Allan Sanford (Sanford obituary on P. 34).

Balch, who spoke at a recent memorial service on campus for Sanford, quipped that working with the esteemed geophysicist gives him “good bloodlines.”

In 1989, Balch was an erstwhile graduate of The Evergreen State College in Olympia, Wash., when he and two friends decided to take an extended road trip in search of graduate schools.

“We had stopped in Socorro almost as an afterthought, since New Mexico Tech was conveniently located between Carlsbad Caverns and Los Alamos,” he said. The trio got in contact with Al Sanford, who met them on a Saturday morning during a holiday weekend, showed them around campus, and extolled the virtues about Tech’s geophysics program.

This warm reception by Sanford contrasted sharply with the friends’ earlier visit to Massachusetts Institute of Technology, where they couldn’t even get the Physics Department secretary to speak to them.

“That personal touch led me to include Tech on my list of schools to apply to,” Balch said. In the spring of 1990, he received a call from Sanford with the offer of an Amoco Fellowship, and to work with him on researching the Socorro Magma Body.

Balch had landed at New Mexico Tech with a baccalaureate degree in Physics; nonetheless, Sanford accepted him



opportunity to build relationships.

“I like the outdoors – hiking, fishing, hunting,” Balch said. “I never played golf before moving here, but I’m an avid golfer now.” Balch cites the “big skies and wonderful weather” among New Mexico’s natural resources.

“And Socorro’s not a bad place to raise kids,” he added, referring to adult sons Robert and Alex.

Bob Balch is currently advising five graduate students and is active in the SPE at both the local and national levels. He is a longtime judge for the N.M. Science and Engineering Fair and served as a judge at the Intel International Science and Engineering Fair in 2007.

Since 1997, Balch has graduated 34 students with M.S. or Ph.D. degrees and has employed dozens of undergraduate students to assist in his research projects.

“I’m proud of my grads,” Balch said. “Many of them are now established scientists and engineers themselves.”

Bob Balch, Reid Grigg and Jim Bell doing fieldwork on a carbon sequestration project

into the Geoscience program, but he had some catching up to do as he had never taken a geology course. As it turned out, then-President Laurence Lattman taught Geology 101, so Balch was in good hands right from the start.

He completed a Master of Science in Geophysics in 1993, followed by his Ph.D. in 1997, both under the wing of Sanford.

Balch equates his final graduation date with the price of oil, which in 1997 was selling for as little as \$8 a barrel. By comparison, after the record peak of \$145 it reached in July 2008, the price of crude fell to \$30.28 a barrel, the lowest since the financial crisis of 2007–2010 began.

He is an active researcher and also heads the Reservoir Evaluation and Advanced Computational Technologies (REACT) Group at the PRRC where he oversees research projects and supervises staff and student members of the group. Balch also has a long list of publications and presentations to his credit.

Balch worked as a post-doctoral researcher under Bruce Hart of the N.M. Bureau of Geology and Mineral Resources for six months in 1997, and then took a full-time position at the PRRC.

“I had two other options – three weeks on, one week off, with a seismic crew in Colombia, or move to New Guinea, to live in a

compound and where my wife would need an armed guard to go shopping,” Balch recalled. “It was not a difficult decision to make – I took the post-doc at the Bureau. With two small kids at the time, it was fortuitous.”

The small size of Socorro suits Balch and wife Karen, a writer and department secretary for petroleum engineering.

“I also like small schools,” he said. New Mexico is a great state for geoscience studies, he continued. “Here, you can see all the rocks. In Washington, there’s moss and trees and stuff that gets in the way.” Small schools afford students a chance to forge closer interactions with faculty and the

# people you know

## 1950s

### **Dr. Marvin W. Rowe ('59)**

Although Chemistry Professor Marvin W. Rowe officially retired in 2010 from Texas A&M University after teaching there for over 40 years, he has worked as a full-time volunteer at the Plasma Laboratory that he helped build (see <https://abqjournal.com/797281/carbon-dating-with-a-soft-touch.html>).



Dr. Marvin Rowe

Rowe earned a bachelor's in petroleum engineering from New Mexico Tech in 1959, a Ph.D. in nuclear chemistry from the University of Arkansas in 1966, and conducted post-doctoral studies in physics at the University of California-Berkeley.

The plasma device

Rowe developed for nondestructive radiocarbon dating has been honored by being named as one of the top 10 discoveries in archaeology in 2010 by the journal *Archaeology*. He also was awarded the Fryxell Award of the Society of American Archaeology in 2014.

Dr. Rowe lives full-time in Santa Fe.

## 1960s

### **Dr. Raul Deju ('69)**

Dr. Raul Deju's seventh book, "We Got Mojo! – Stories of Inspiration and Perspiration," has recently been published and is available via Amazon and Barnes & Noble. Dr. Deju joins forces with 35 of his

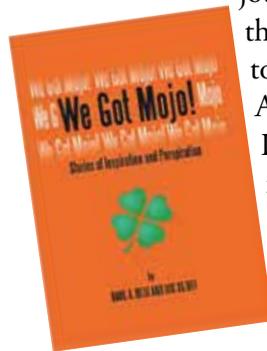


Dr. Raul Deju

friends and colleagues, including some New York

Times bestselling authors in the book, a compilation of personal essays including one by Deju, its lead author.

In 1960, Deju emigrated from Cuba at age 14 – without his parents. He learned English and found his way to New Mexico Tech where he earned his bachelor's in Physics and his doctorate in geosciences (hydrology) in 1969 at the age of 23. His



journey on the road to the American Dream is featured in this book, together with

some of the adventures of his collaborators.

Deju currently serves as a senior partner at Brightstar Capital Partners, a New York private equity firm. He has received the John F. Kennedy University Award for a lifetime of entrepreneurship, and has been named one of the 25 leading Hispanics in the San Francisco Bay Area. He serves on the board of

a number of corporations including the Disabled Veterans Business Alliance, one of his charitable choices. Deju lives in the San Francisco Bay area with his wife of 38 years, Shari Lynn. Two sons and two grandchildren all live in California.

## 1980s

### **Lynn Neergaard ('83)**

Lynn Neergaard is a Leidos Inc. employee contracted to the Air Force Research Laboratory's Munitions Directorate at the Eglin Air Force Base, Florida. He volunteered to mentor for the AFRL's summer scholar program during the summer of 2016.



Lynn Neergaard and current Tech student Emily Kemp with their outstanding award plaques at the AFRL Munitions Directorate

Neergaard's two projects were "mass and location of fuel in a tank" for the Doolittle Scholars program, which supports study by high school students; and "Transient Diffusion Creep in Structural Metals" for the Air Armament Scholars program, which supports study by upper-class college students. Near the end of the summer, he was voted Outstanding Mentor of the Year.

**Keith ('87) and Constance ('87) Bodine**

New Mexico Tech alumni Keith and Constance Bodine's wild ride has taken them from



Keith and Constance Bodine

California to Virginia, China, New York, Florida, Massachusetts and finally Union, Maine - home of their thriving Sweetgrass Farm Winery & Distillery. [www.sweetgrasswinery.com](http://www.sweetgrasswinery.com)

**Lauren M. Roberts ('88)**

Lauren M. Roberts, who earned his bachelor's in mining engineering with highest honors from New Mexico Tech in



Lauren Roberts

1988, has been appointed Chief Operating Officer for Kinross Gold. Corp. effective Jan. 1, 2017. Roberts has been with Kinross since 2004, most recently as Senior Vice President of Corporate Development. He previously worked with Barrick Gold and Hecla Mining.

"Lauren has deep experience in all facets of

mining operations and has proven to be a strong and accomplished leader in all the different roles he's had at Kinross," said President and CEO J. Paul Rollinson in a company press release. "I am confident that he will continue our strong and consistent operational performance and maintain our world-class safety record."

At Kinross, Roberts has held increasingly senior roles, including the Senior Regional Vice-President for the Americas region, which is the largest in the Company's portfolio with five operating mines in three countries. Roberts was also General Manager at the Company's underground Kettle River-Buckhorn mine, where he led the successful development of the mine and its first years of operation; and the open-pit Fort Knox mine, where he oversaw improvements to its safety record and operational performance.

Roberts is a licensed Professional Engineer in the states of Washington, Nevada and Alaska. Kinross is a

Canadian-based senior gold mining company with mines and projects in the United States, Brazil, Russia, Mauritania, Chile and Ghana.

**1990s**

**Jessica A. Gaskin ('95)**

Jessica A. Gaskin, Ph.D., was featured in a recent edition of "Think," a magazine published by Case Western Reserve University, for her leading role on NASA's X-ray Surveyor telescope project.

In 1995, she earned a bachelor's in astrophysics from New Mexico Tech. Gaskin has a master's degree from Case Western Reserve and a Ph.D. from the University of Alabama at Huntsville.

The Surveyor is the proposed successor to the Chandra X-ray Observatory, which, launched into space in 1999, is the world's most



Dr. Jessica Gaskin

powerful X-ray telescope and orbits 200 times higher than the Hubble Space Telescope. The 5,000-pound telescope is part of the proposed SuperHERO program. It flew on a scientific balloon that's longer than a football field and travels at an altitude of around 130,000 feet.

A study scientist based at NASA's Marshall Space Flight Center in Huntsville, Gaskin doesn't focus on a single research question. Instead, she works to help a community of researchers around the country define a long list of scientific questions, including: How do black holes form? How do they co-evolve with galaxies? How do galaxies emerge? The desire to answer these questions defines how the X-ray Surveyor telescope will be configured.

Gaskin breathed in astronomy from childhood, and not only because she grew up near the Johnson Space Center in Houston. "It just came naturally," she said. "At home, we looked at the

stars every night, every vacation."

## 2000s

RiskSense Inc., a pro-active cyber risk-management company, has closed a \$7 million round of funding led by Paladin Capital Group. The investment will help RiskSense continue its rapid growth by expanding its sales and marketing efforts, as well as broadening and accelerating product development. Paladin Capital Group principal Mourad Yesayan will join RiskSense's board of directors. "With



Dr. Srinivas Mukkamala

RiskSense, enterprises and governments are finally able to manage cyber risk, quickly orchestrate remediation and monitor the results in the context of the organization's business goals," said co-founder

and CEO Dr. Srinivas Mukkamala. "This round of financing will help us invest in the resources we need to execute our vision even more rapidly and broadly – and capture more market share."

RiskSense was founded as a technology transfer from New Mexico Institute of Mining and Technology to commercialize the university's cyber security research. The advanced cyber research programs at NMT, led by the founders of the company, were funded in partnership with the U.S. Department of Defense and U.S. Intelligence Community. After validation of the research and technology for both commercial and government applications, the company was spun out of NMT.

## 2010s

### *Justin Clements ('10)*

Justin Clements, who graduated with a bachelor's in biology from New Mexico Tech in 2010, is the recent recipient of a \$10,000 academic scholarship from the



Justin Clements

National Potato Council (NPC) for the 2016-2017 academic year. Clements, who grew up in Los Alamos, is a fifth-year doctoral student in the Molecular and Environmental Toxicology Center working in the Department of Entomology at the University of Wisconsin-Madison.

The \$10,000 award is provided annually to a graduate student with a strong interest in research that can directly benefit the potato industry.

Clements is focused on uncovering molecular mechanisms of insecticide resistance in the Colorado potato beetle (CPB). His work is timely and important as scientists seek to learn more about neonicotinoids and how pests react and develop resistance to them. Further understanding of the

mechanisms involved will play an important role in achieving long-term success against resistant pests. Clements' work on targeting specific genes also seeks to establish a more sustainable crop management program to deal with resistance in the field.

According to Dr. Russell Groves, who oversees the Entomology lab where Clements currently does his research, Clements is an ideal candidate for the scholarship: "He nicely blends theoretical and empirical insect genetic investigations with resistance management, and is very well regarded in the upper Midwest region, where producers have taken great interest in the results of his graduate research."

**Dr. Leandra Boucheron ('10)**

The UNM Center for Teaching and Learning recently announced the Teaching Fellows Award recipients for 2016-2017, including New Mexico Tech graduate Leandra Boucheron. Boucheron earned her baccalaureate



UNM student Lauren Hundel and Dr. Boucheron prep an atmospheric plate demo

degree in 2010 from New Mexico Tech, and her master's and Ph.D. from the University of California-San Diego in 2012 and 2015. Boucheron has been a faculty member in the Physics and Astronomy Department at UNM since January 2016. She is a full-time lecturer for undergraduate-level courses.

**Wendi Cole ('16)**

Wendi Cole, a 2016 graduate of New Mexico Tech with a bachelor's in mineral engineering, was profiled in the 23rd annual Special College Issue (2016-2017) of "*Winds of Change.*" The magazine is published in conjunction with the American Indian Science and Engineering Society (AISES).

Cole, a Crow Creek Sioux, grew up in a single-parent household with her mother, Rosebud Sioux, who graduated with her college degree in her fifties. That example, Cole said in the article, "showed me that, even though I am a single parent, too, I can get an education."



Wendi Cole

She enrolled at the Southwestern Indian Polytechnic Institute (SIPI) and became heavily involved in school and club projects. In 2013, Cole was chosen from some 1,800 eligible students to be on the All-USA Community College Academic Team, comprised of only 20 members nationwide. Cole received the highest

score in the state of New Mexico and won the New Century Scholar award, which included a full-tuition scholarship to any school in the state. She chose New Mexico Tech "which was a little faster paced, with more students in core classes," she said. "It took a few months to get used to that."

Because she has a special-needs child, Cole could only attend SIPI part-time at first, and commuted from Albuquerque to Socorro to attend Tech so that her son could stay in a school where he was doing well. She did this until her last year at Tech when Cole won a scholarship from the Freeport-McMoRan Foundation that helped her afford a place to stay in Socorro during class days. "Because of that scholarship, I saved time commuting, increased my course load and graduated six months early," Cole said.

She currently works as an operations associate for Peabody Western Coal Co. at the Kayenta Mine in Kayenta, Ariz.

# in memoriam

## *Allan Sanford*

Another member of the New Mexico Tech “old guard” has left the ranks, as the New Mexico Tech community learned of the death of Dr. Allan R. Sanford, 89, who passed quietly on August 9, 2016 in Woodinville, WA, in the home he shared with his wife, Alice. Sanford was a longtime Professor of Geophysics at Tech, and for many years the local media contact for information on Socorro-area earthquake activity.



Dr. Allan Sanford

Sanford was born on April 25, 1927 in Pasadena, CA, the fourth of the five children of Roscoe and Mabel Sanford. He often reminisced about his childhood: BB gun fights, boxing at a friend's house

and having to mow a very large lawn (It really is not that big). After completing high school at Pasadena Junior College, he entered Pomona College and played on the football team, often noting that he had played games in the Rose Bowl, the team's home venue.

He interrupted his studies at Pomona to enter the Navy, and after a year and a half of training as a radar specialist, he had the fortune of being discharged right after VJ Day. Back at Pomona, Sanford completed a BS degree in Physics in 1949, when he decided to bicycle through Europe with a friend – he returned home by hitchhiking from the east coast to the west coast.

Although Al spent summers working jobs like painting the dome at the Mt. Wilson Observatory where his father worked, or as a bellboy at a Lake Tahoe resort, his first real job was working for a geological survey crew throughout the west. He would often tell stories about being in various places in Wyoming or Colorado during his days on the survey crew.

Ultimately this experience led him to graduate school at California Institute of

Technology, where he studied Geophysics. He once was charged with driving Albert Einstein from Cal Tech to the Mt. Wilson Observatory. As a graduate student, Al assisted Professor Richter (of the earthquake scale) in his lab. Under the guidance of Professor C. H. Dix, he completed his Ph.D. in 1958.

In 1956, Al married Alice Carlson, who had moved to California to get away from the farmland of Nebraska. Little did Alice realize that a little less than a year after getting married, she and Al would be moving to Socorro, New Mexico, where he was to take a faculty position at the New Mexico Institute of Mining and Technology. Thus began an over 50-year-long adventure and love affair with the Land of Enchantment. It took Alice a few more years to feel the same, but in the end, Socorro became home, the place they raised their two children, Rob and Colleen.

Al built a long career at NMT, and enjoyed the envious habit of being able to walk to and from work twice every day. He would enjoy lunches at home and take a quick 10-minute

snooze before returning to campus. Over the years in Socorro, Al enjoyed picnics, hunting dove and quail, and fishing. When his kids were old enough he returned to snow skiing and camping. Several memorable backpack trips were taken in the San Juan Mountains of southwestern Colorado, with perhaps the most memorable occurring in August of 1974 when, after a long trip, Al's group returned to the Grand Imperial Hotel in Silverton, CO to see Richard Nixon resign. Al's family finds it interesting and a bit strange that his passing occurred on the anniversary of that infamous event.

Other memorable activities included making wine (not very good), playing tennis with his son and coloring eggs black at the annual Easter picnic egg contest. One special talent worth mentioning is that for most of his life he would show people at parties that he could put his body through a coat hanger. This seemed to always surprise people and make them laugh. Al enjoyed having fun.

Although he officially retired from New Mexico Tech in 1997, he continued to

work on publications related to his research until this year. During his career, Al received many institutional awards for teaching and research, including Tech's Distinguished Researcher Award and election as a Fellow in the American Association for the Advancement of Science. He and Alice continued to live in the house they built in 1965 until 2013. After retirement, Al especially enjoyed getting up early in the morning to watch the sunrise from his front yard. He found much peace in those moments.

Allan is survived by his wife Alice of nearly 60 years, his son Rob Sanford, and daughter Colleen Marzluff.

In his last months, Al thought many times about life and its meaning. The following is a quote from some of his last words: *"I suppose over the years the closest thing to religion for me was watching sunrises in Socorro. The extreme beauty of those sunrises made me wonder whether there is something truly unique about the earth - that it is simply not the result of many, very low-probability events. So my human mind had reached the conclusion that the earth and*

*its beauty is the result of some kind of divine intervention."*

**Arthur E. Bukowski**

A turquoise-painted gate leading into the Bukowski home on Bernard Street in Socorro stands as a testimonial to the much beloved family patriarch. A hand-drawn, bushy mustache speaks for itself.

In time, the writings and image will fade; not so the memory of Art Bukowski, the beloved New Mexico Tech math instructor who died on Feb. 18, 2016, after an extended illness.

As Dr. Arthur E. Bukowski, the affable teacher joined the university's Math Department in 2000, after retiring from the University of Alaska at Anchorage. During his time at Tech, Bukowski made a lasting impression both on his colleagues and a generation of students.



Dr. Art Bukowski

Upon settling in Socorro with wife Marcia and youngest daughters Lacey and Lea (little girls at the time), Bukowski resurrected an aging abode quietly resting on a narrow street across from San Miguel Church. The couple graciously opened their restored home to the public for an AAUW holiday home tour. Visitors noted that the dwelling reflected a warmth and affection that extended far beyond dormer windows and earth-toned tile.

Bukowski was born in Brownsville, Pa., one of five children of Joe and Ellen Bukowski and the only one to go to college. After earning his bachelor's and master's in mathematics at Ohio University, Bukowski was awarded a Ph.D. from the University of New Mexico in 1972. Although he was offered a tenure-track position at Ohio State University that year, Art opted for a position overseas where he taught in Dhahran, Saudi Arabia, at King Fahd University of Petroleum and Minerals.

In 1974 he was offered a full time position at Sandia National Laboratories in a special applied mathematics group. Upon taking the

job, all federal funds for new positions were frozen due to the oil embargo, and Art returned to UPM in Dhahran.

Bukowski took a position at the University of Alaska in Anchorage in 1976 where he taught for 22 years – 14 of them as department chair, retiring in 1998. He spent a sabbatical year in Cairo, Egypt (1985 to 1986), teaching at the Egyptian Air Force Academy.

In 2000, Bukowski accepted a lecturer's position at New Mexico Tech, having retired as professor emeritus from UAA. While at Tech, he mostly taught Calculus courses, but occasionally Linear Algebra and Vector Analysis; and, when students would request it, he taught Abstract Algebra.

Ever the peripatetic professor, Bukowski while on leave from Tech from 2003 to 2005, taught at Gulf University of Science and Technology (GUST) in Kuwait.

His teaching legacy rests with his students, now scattered all over the world in many occupations and leadership roles. But Art was more than just a math professor: he was a lifelong friend, a wonderful father

and grandfather, and a loving and dedicated husband.

Among those left to mourn him are his wife Marcia, six children (Kelly, Donde, Steve, Devon, Lacey and Lea), and 16 grandchildren.

***Dr. John Bower, MD***

Dr. John Bower passed away at home after a protracted battle with Parkinson's Disease. He leaves behind his wife of 30 years, Joanne (Kizilski), and son, CJ (Christopher).



Dr. John Bower, MD

Born January 23, 1958, in Fort Belvoir, VA., Bower grew up in Albuquerque. After graduating high school in 1976, he attended New Mexico Tech where he obtained a bachelor's in biology and graduated magna cum laude. Following college, he joined the Navy and attended the University of New Mexico where he received his M.D. in 1984.

Bower did a surgical

internship at Naval Hospital Oakland from 1984 to 1985, where he met Joanne, and they were married on February 1, 1986. After his internship, Bower spent a year as Medical Officer on the USS Camden stationed out of Bremerton, WA, from July 1985 to July 1986. He then went to Okinawa, Japan, where he worked as an E.R. physician. From Okinawa, Bower was stationed at Naval Air Station Moffett Field, CA, as a clinic physician. He was honorably discharged from the Navy, at the rank of Lieutenant Commander, in June 1989. Bower did his residency in family medicine at Merced County Hospital. In July 1992, the Bowers moved to Carson City with their son CJ, where John joined Carson Medical Group. Desert Sage Medical, co-owned by John, was founded in 1999. In 2005, Bower closed his practice and worked for Med Direct in clinics in Carson City, Minden, and Dayton as a family physician. Due to his Parkinson's, he stopped practicing medicine in October 2009. John enjoyed teaching, hiking, golf,

backpacking with his son, kayaking and spending time with family and friends, but his biggest passion was motorcycle riding. He and Joanne traveled all over the West Coast and Canada on the backs of their many motorcycles.

***Michael Arthur Watts***

Michael Arthur Watts died at the University of Washington Medical Center on July 20, 2016, in Seattle, WA at the age of 60 from a primary cancer of the heart.

He is survived by his loving wife of 34 years, Ann (Annie) Watts; sons Arthur (Mac) Watts and Andy Watts of Renton, WA; daughter Erin Hallman of Dallas, GA; and 10 beautiful grandchildren. His daughter, Heather, preceded him in death.

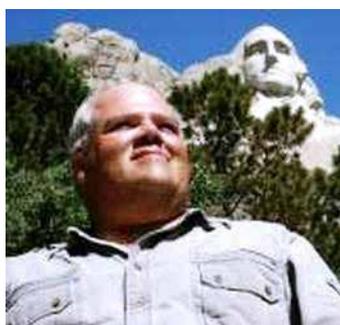
Watts was born on November 18, 1955, in San Pedro, CA. He was a man who believed in life-long learning, acquiring a B.S. in Materials Engineering from New Mexico Tech, a Master's of Education with emphasis in Cross-Cultural Teaching from National University, and a Master's Certificate of Project Management from George

Washington University. His skills were as impressive and varied as his degrees.

Mike was accomplished at everything he set his mind to, and he soaked up information like a sponge – then could effortlessly and clearly explain even the most complicated concepts to anyone, at any level. He was a generous, loving friend to all who have been fortunate enough to have known him. As his walk with Jesus matured, his relationships provided others with a glimpse into the heart of his Lord and Savior. He was passionate about life, and a life more abundant for himself and all those he met.

Watts was a musician, artist, scuba diver, writer, engineer, teacher, pilot, seaman, traveler and adventurer – a man for all seasons, a man for all reasons. He loved to play his ukulele, and his sonorous singing voice was a joy to all. His lovely watercolor fish paintings brought his scuba trips in the tropics to the cold north of Alaska. An engineer who could write? Yes. Mike was that, too. He brought color to everyday life, and his stories of his adventures were breathtaking. He was

scuba diving at 12, and became an able-bodied seaman at 16. He lived to travel and learn. It was all about the adventure!



Michael Arthur Watts

He joined the Air Force at 18 and because of his amazing abilities, he was immediately placed in high-tech, secret work that took him all over the world, including being shot down and fighting his way out of Laos and Cambodia. Saved while attending New Mexico Tech in Socorro, Mike and Annie set down deep roots there and every other place they lived after that miracle of God.

In the 90s, Watts worked for ARCO as a corrosion engineer and later as a facilities engineer. When ARCO was sold, he tried to retire. It didn't take. So, characteristically, he returned to school and became a teacher, choosing to teach middle-school-aged

kids. His desire was to catch kids just as they were "waking up," and show them the joy of learning, the excitement of the scientific world, and the pure elegance of mathematics.

He returned to engineering when many teachers were being laid off. As usual, he was considering others in this decision – he could find work as an engineer, but the majority of the teachers being laid off had no other career to which to return. So back to Alaska he went. Mike became a project management professional, working for BP as a lead development engineer.

In lieu of flowers, please send donations to Welcome Home to the USA®, a fledgling organization whose goal is a holistic, faith-based, case-managed, 24/7 reintegration resource for all veterans who are transitioning from active duty to the civilian world. Watts was involved in the establishment of this much-needed organization.

**Patrick Gregory Garcia**

Patrick "Pat" Gregory Garcia, 33, a 2006 graduate of New Mexico Tech and a passionate rugby player,



Pat Gregory

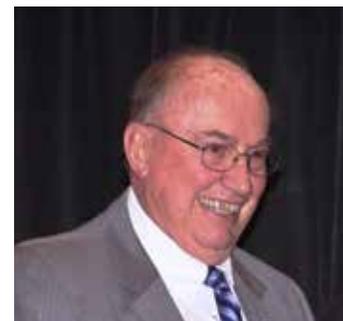
passed away Sunday, June 5, 2016. Pat was born June 23, 1982, in Albuquerque. After graduation from Grants High School, he earned a bachelor's in Mechanical Engineering from NMT. He lived in Santa Fe and worked at Los Alamos National Laboratory.

Pat, who had a passion for rugby, traveled to England with the NMT Rugby Club and was a proud member of the Santa Fe Santos RFC. He also was a loving and caring son, a supportive older brother, and fiercely loyal friend. Pat touched the lives of many individuals around the world, and was one of the most optimistic and fun-loving people to walk this earth. Pat was filled with life and love, and he will be greatly missed.

Pat is survived by his mother, Sherry Garcia of Milan, N.M.; his brother, Matthew Garcia of Albuquerque; and grandmother, Sandra Dutton of Huachuca City, Ariz. Those wishing to make a contribution in Pat's honor can donate to Craig Hospital in Englewood, Colorado at <https://craighospital.org>.

**Richard Carpenter**

Richard N. "Dick" Carpenter, a 54-year resident of Santa Fe, passed away while surrounded by his family on August 6, 2016 at the age of 79. Carpenter served on the Board of Regents for New Mexico Institute of Mining and Technology from 2003 to 2015, including multiple terms as chair.



Dick Carpenter

Carpenter was born on February 14, 1937, in Cortland, NY. He graduated

from Syracuse University and Yale Law School. From 1959-1960, he traveled and spoke extensively throughout the Indian subcontinent as a Rotary Foundation Fellow for International Understanding at the University of Punjab in Lahore, Pakistan. He was described by the Pakistani press as having “earned the unofficial title of ‘goodwill ambassador’” and by the Pakistani President as “a great ambassador in spreading goodwill and understanding.”

Carpenter’s legal practice in Santa Fe spanned 40 years, specializing in natural resource and utilities law. He participated in many New Mexico and United States judicial and administrative proceedings. He was a successful lobbyist who drafted, reviewed, monitored and advocated for proposals before the New Mexico Legislature, the Governor, and the U.S. Congress.

Clients he represented included Plains Electric Generation and Transmission Co-op and other Rocky Mountain and southwestern rural electric co-ops, natural resource companies, commercial broadcasters, the Teachers

Federation, the Navajo Nation, St. John’s College, Stanford University, and various New Mexico school districts.

Carpenter was a passionate supporter and leader of charities and civic and governmental organizations. He served on the board of trustees of St. Vincent Hospital from 1980 to 2001, including service as chair for many years.

From 2002-2012, he served on the board of directors of the Archdiocese of Santa Fe Catholic Foundation. He served many other community organizations, including the St. Vincent Hospital Foundation, Santa Fe Community Council, Santa Fe YMCA, Santa Fe Preparatory School, First Presbyterian Church, New Mexico Educational Assistance Foundation, Con Alma Health Foundation, and the Santa Fe Energy Task Force.

A devout Catholic, Dick was a leader of the Saint Francis Cathedral Basilica capital campaign and was a lector at the Cathedral from 2007-2012. His hobbies included computing, reading, tennis, and travel to over 65 countries.

Carpenter is survived by his loving wife of 25 years, Leslie Carpenter; his son and daughter-in-law, Andrew and Rebecca of Westminster, Md.; his stepson and daughter-in-law, Todd and Patricia Nordby; and his step-daughter and son-in-law, Kari and James Armijo, all of Santa Fe.

In lieu of flowers, the family requests memorial contributions to the Christus St. Vincent Hospital Foundation.

### *Theodore Raymond Fons*

Theodore “Ted” Raymond Fons, 75, lost his valiant fight against cancer on July 1, 2016. He was born September 3, 1940, in Weed, Calif., to Della Fain Fons (nee Baker) and noted forest-fire researcher, Wallace Leo Fons.

Ted grew up in Kensington, Calif., and graduated from El Cerrito High School in 1959. He received a degree in geophysics in 1963 from the New Mexico Institute of Mining and Technology, and worked for Mobil Oil Corp. from 1963 to 1977. He moved to Anchorage, Alaska, and was employed by the Alaska Department of Natural Resources as a petroleum

geophysicist, returning to Mobil Oil in Denver in 1981. Ted opened Excalibur Geophysical Consultants in 1982, marketing the GMA geophysical modeling software.

After selling his business to his employees in 1996, Ted embarked on a second career as a ceramic artist, creating raku art. He exhibited in 15 galleries in six states and won several awards.



Ted Fons

Ted is survived by his wife and business partner of 33 years, Mary Elizabeth Cooper-Fons; his sons, Eric Wallace Fons of Arnold, Md., and Michael Adam (Sandra) Fons of Aurora, Colo.; and Leah (Winki) Fons of Irving, Texas.

Ted was greatly loved by his family and friends, and he is greatly missed.

Memorial suggestions are to [patientservicesinc.org](http://patientservicesinc.org), [projectangelheart.org](http://projectangelheart.org), or [csi-usa.org](http://csi-usa.org).

# the last word

sean salinas

New Mexico Tech graduate student Sean Salinas has plugged into the electric vehicle trend by designing a plug-in security module for the battery-powered cruisers.

His poster titled “Diagnostic Security Module for Plug-in Electric Vehicles” won the top award at the summer-ending research symposium sponsored by the Idaho National Laboratory, where Salinas recently completed his second summer internship.

Salinas, who earned his bachelor’s in computer science last May, is continuing graduate studies at New Mexico Tech. He plans to return to Idaho in the summer of 2017 for a third internship. Salinas developed a prototype, which he will test this fall as a remote employee of the national lab.

“It’s working perfectly in a test environment,” he said. “We are now working on it with an electric vehicle and charger.” More than 300 interns presented posters at the symposium in mid-August. Winners

and runners-up were named in four categories. Salinas won the “Best Securing and Modernizing Critical Infrastructure” competition.

“A big fear in the infrastructure/security realm is that malware from cars will spread to the grid,” he said. “With electrical vehicles, you’re plugging into the grid. This new security tool will monitor all the systems and look for indicators of malware, quarantine it and keep it from spreading.”

Salinas has been interested in computers since he was in elementary school. His father, a Tech alumnus with a degree in computer science, gave his six-year-old son an Intel 8086 computer and a book on programming in Pascal. “I kind of grew my knowledge as time went on,” Salinas said. “I had one of the only computer science exhibits at the Science Fair in 1993 or 1994. I got first place – and the only place – in computer science in elementary school.”

Salinas, a 2004 graduate of Sandia High School

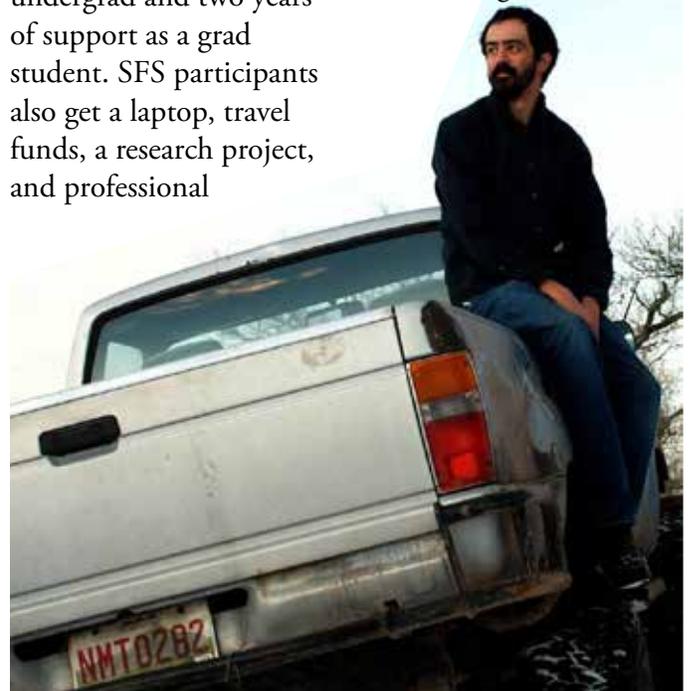
in Albuquerque in 2004, took a few years off from school before enrolling at New Mexico Tech. He is not sure what his master’s project will involve, but he says it will definitely be in cyber security. “Malware is pretty interesting to me,” he said. “It seems like a good fit as I funnel down toward picking a thesis project. Cyber security and infrastructure grids present an interesting research area.”

Salinas is enrolled in the Scholarship For Service, or SFS, program. As an SFS student, he received a year of support as an undergrad and two years of support as a grad student. SFS participants also get a laptop, travel funds, a research project, and professional

development course work. Upon finishing his master’s, Salinas will be required to work three years for a government agency.

The SFS program provides participants an annual stipend that covers tuition, housing and living expenses.

“I’m supported the whole way,” Salinas said. “I’m getting paid to go to school. The commitment I made at the end, where I do government service, is basically a guaranteed job. It’s not that I have to serve. It’s that I get to serve.”





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