NEW MEXICO TECH
SCIENCE • ENGINEERING • RESEARCH UNIVERSITY

GOLD PAN

Alumni Magazine

SUMMER 2019

IT'S ALL ABOUT THE (STUDENT) RESEARCH

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Gold Pan is published twice yearly by the New Mexico Institute of Mining and Technology (New Mexico Tech) for alumni, faculty, and friends, by the Office for Advancement and Alumni Relations, 801 Leroy Place, Socorro, NM 87801.

On the cover

Former Mechanical Engineering students (class of 2019) Troy Pacheco and Christopher Vigil work on their capstone design project, a 3-pound battle bot. Troy and Christopher spearheaded and co-led the project. *See story on page 23.*

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Corrections for Winter 2019

People You Know: Randall "Randy" Hanson earned dual degrees in 1976 – a B.S. in Geology and a B.S. in Mathematics. We apologize for inadvertently omitting his hard-earned second degree!

In Memoriam: An incorrect photo was included with Alice "Cookie" Jojola's memoriam. We apologize to her family for the error.

"Greetings New Mexico Tech Alumni"

As I begin my fourth year as President of New Mexico Tech, I am pleased to highlight some recent accomplishments and upcoming events here on our campus.

First, significant progress has been made on one of the key goals for the NMT Regents, building a new residence for the university president as well as the accompanying university house located nearby. With all the approvals behind us and major contributions from the Bursum family to the President's Residence and from the Deju family to the University House, we celebrated a ceremonial groundbreaking in early June with our key donors, their guests, faculty, and staff (*see article page 6*). I spoke of the changing culture at Tech, focusing on philanthropic giving from alumni, friends, and stakeholders of our exceptional university. Dr. Raul Deju and his wife, Shari, along with Cuatro Bursum representing the Bursum family, shared their visions of the future of both buildings. Jerry Armijo spoke to the audience on behalf of the Board of Regents and the NMT Foundation, explaining the history of the current President's Residence and the need for the new residence. After lunch at the Macey Center, staff and guests traveled to EMRTC for a "*car bomb*" demonstration and then to the Magdalena Mountains to visit the MRO and MROI complex. The day concluded with steaks on the mountain along with wine provided by the Capitol Bar and a selection of pies from Pietown!

NMT owes a sincere debt of gratitude to the major donors whose contributions made these projects reality. Dr. Raul and Shari Deju are the namesakes of the Deju University House, which will serve as a multipurpose entertainment/conference/outreach complex. Dr. Deju, a two-time graduate of NMT, has been instrumental in supporting philanthropic giving and inspiring all of us to do better in our contributions. The Deju family has other signature projects in the works at NMT, which I look forward to sharing more about in the future.

The Bursum Family of Socorro, represented by Holm Bursum IV (Cuatro), made a significant donation that is pivotal in the construction of the new President's Residence. The Bursum family's history in Socorro is similar to the university's history in town. They moved here more than 130 years ago and have been committed to making central New Mexico a vibrant and welcoming oasis. The new President's Residence will provide NMT guests with a similar warm and welcoming environment.

The year 2019 represents a milestone for two important reasons. The university was officially founded in 1889, making this the 130th anniversary of the school formerly known as the New Mexico School of Mines. I encourage all of our alumni to help us celebrate during the annual 49ers Homecoming in October. We have been expanding the activities in recent years and will continue to do so this year.

Also, this year marks the 25th annual President's Golf Tournament, as always with the proceeds from this event providing critical support to make sure students finish their undergraduate degree as well as supporting stewardship endeavors at NMT's Office for Advancement and Alumni Relations. This fun two-day event raises nearly $180,000 each year from golfers and sponsors. Over the lifetime of this fund, we've helped 362 students with $833,000 in scholarships. This event is the brainchild of former President Dr. Daniel H. Lopez, who had the vision to create a novel way of helping students complete their degrees with as little student debt as possible.

Please consider supporting the President's Golf Tournament, or donating to the department or scholarship fund of your choice. Your generosity helps current and future Techies fulfill their goals of becoming professional engineers and scientists like so many of you!

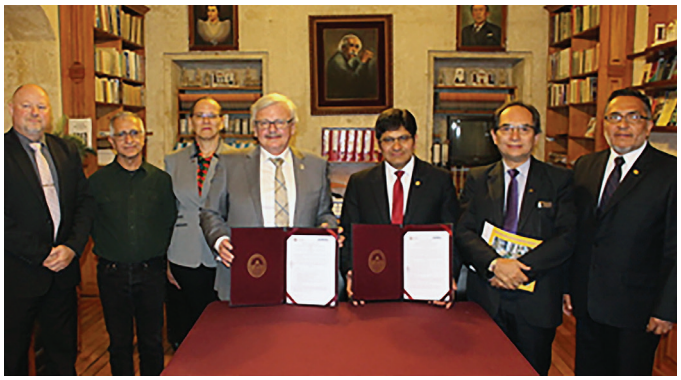
Sincerely,

Dr. Stephen G. Wells
President, New Mexico Tech

PERU TRIP

NMT DELEGATES VISIT UNIVERSIDAD NACIONAL DE SAN AGUSTIN, AREQUIPA, PERU

In October 2018, a delegation from New Mexico Tech visited Universidad Nacional de San Agustin (UNSA) in beautiful and historic Arequipa, Peru to begin an academic collaboration between the two universities. NMT already has agreements with other Latin American universities: National University of Colombia (Bogota), Pontificia Universidad Catolica del Peru (Lima), and University of Sonora and Sonora State University (Hermosillo, Mexico).



At the signing of the Memorandum of Understanding (l to r): Michael Voegerl (Director of NMT Student Affairs and International Programs), Dr. Navid Mojtabai (Chair of NMT Mineral Engineering), Dr. Lorie Liebrock (Dean of NMT Graduate Studies), NMT President Stephen Wells, Dr. Sanchez (UNSA Rector), Dr. Vargas Gutierrez (USNA Director of International Relations), and Dr. Minaya Lizarraga (USNA Director of Mining and Geology).

Geologist at work – President Wells inspecting the ore at Cerro Verde mine.

While in Peru, the NMT team had the opportunity to spend some time socializing with alumni (l to r): Andrew Gabrysiak (*B.S. Mineral Engineering, 2017*), Mackenzie Best (daughter of Jeff Best, currently pursuing an M.S. in Geochemistry at NMT); Jeff Best (*B.S. Mineral Engineering, 1997*), President Stephen Wells, Dr. Navid Mojtabai (Mineral Engineering Chair), and McKay Pugmire (*B.S. Mining Engineering, 1981*).

President Wells (left) and Dr. Mojtabai (right) had the great pleasure of touring several mines. One was the Cerro Verde copper mine, operated by Freeport MacMoRan Copper and Gold, with (center) tour guide and alum McKay Pugmire, Manager of Fragmentation and Loading.

The other mine sites visited were Antapaccay and Coroccohuayco, operated by Glencore; those tours were arranged by alumnus Jeffrey Best.

Two UNSA students accompanied the NMT group on the tour of the Coroccohuayco mine.

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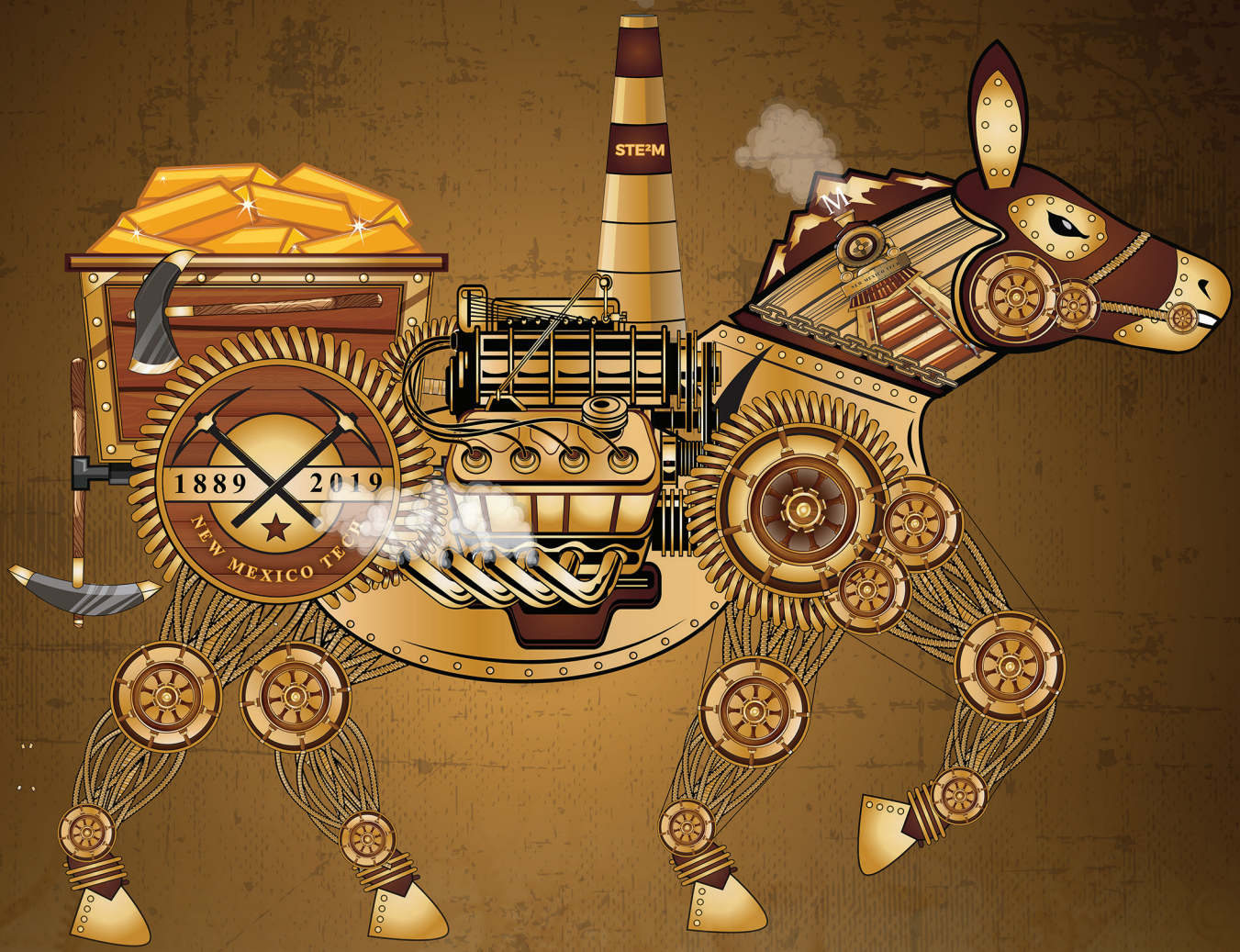
All geared up for a Steampunk 49ers!



100 Years of Celebrating 49ers!

October 17th-20th, 2019

POPP SENIOR CHEMISTRY RESEARCH THESIS AWARD

Emeritus Professor Dr. Carl J. Popp (Chemistry Department 1969 -2003) ***and Mrs. Barbara R. Popp*** are establishing an endowment to award an annual Senior Chemistry Research Thesis Award. The Chemistry student with the top proposal will receive $500 to use for their research.

Dr. Popp earned a B.S. in Chemistry in 1962 at Colorado State University, a M.A. in Chemistry in 1964 at Southern Illinois University, and his Ph.D. in 1968 at the University of Utah. He also did a postdoctoral fellowship at the University of Utah.

His research includes atmospheric chemistry, environmental chemistry, organic compounds in the atmosphere, bionic emissions, and visibility and tropospheric haze.

Dr. Popp was a former local section chapter Chair of the Central New Mexico American Chemical Society. He also served as New Mexico Tech Vice President for Academic Affairs.

Dr. and Mrs. Popp are active and beloved members of the New Mexico Tech and Socorro communities.

Dr. Carl Popp and Dr. Michael Heagy

GROUNDBREAKING CEREMONY
PRESIDENT'S RESIDENCE AND DEJU UNIVERSITY HOUSE

On June 6, 2019, New Mexico Tech hosted a groundbreaking ceremony for two new buildings on campus, honoring the donors who are making this construction project possible: ***Dr. Raul and Shari Deju***, the namesakes of the Deju University House, and ***Cuatro Bursum and his relatives***. Dr. Deju is among NMT's most prominent and successful graduates, having launched an extremely productive career after earning his degrees (*B.S. Mathematics, 1966 and Ph.D. Hydrology, 1969*). Bursum is the CEO and President of First State Bank in Socorro, which has been in the family for three generations.

Thanks to the two major donors and many other smaller donors, these two projects involve no taxpayer funding. Jerry Armijo, member of the Board of Regents and the NMT Foundation, said the groundbreaking represents an important milestone in a years-long plan. The Board established these construction projects as priorities during the hiring process of Dr. Wells in 2016.


President Stephen Wells, Beth Wells, Shari Deju, and Dr. Raul Deju

Over the next year, NMT will construct a new President's Residence and the new Deju University House. These buildings will be pivotal in providing venues that will directly support the university's vision and the goals of diversifying university funding sources, growing funding levels beyond state support, strengthening alumni relations and philanthropic giving, and strengthening town and Tech relations.

Raul Deju said New Mexico Tech is a special place that propelled him to a successful career. He noted the university has provided inspiration and education for thousands of students who have gone on to make significant impacts in their fields and in their communities.

CLOCKWISE FROM TOP LEFT: Shari and Frank Etscorn showed off their Hawaiian finery.

Palm trees and pineapple vases enhanced the tropical evening at Macey Center.

Attendees mixed and mingled while enjoying the festive luau feast.

NMT student award winners (l to r): Evelyn Byrd (2019 Student Appreciation honoree), Meghan HIll (2019 Macey Scholar), Margaret House (2019 Macey Scholar and 2019 Outstanding Engineering Student of the Year), and Alan Tirado (2019 Student Appreciation honoree).

FACULTY SPOTLIGHT
Chelsey Hargather, Ph.D.

BY LISA MAJKOWSKI

We're very happy to feature Dr. Chelsey Hargather, Assistant Professor in Materials & Metallurgical Engineering.

How did you become interested in engineering?

I was in the 11th grade and considering studying business in college. I was good in math and learned about 'what is engineering' through a Penn State women in engineering recruitment program. I received an offer from Penn State, but being from Virginia, I accepted admission to Virginia Tech. I decided on Materials Science & Engineering (MSE) early on. For me, Materials Science & Engineering represents the perfect balance between science and engineering because it involves applying fundamental science in engineering applications. Interesting fact: there are seven types of lattices to describe all of the materials in the world. How you arrange the atoms determines how they will behave.

What happened next after you completed your Bachelor of Science degree?

I did an internship at ExxonMobil. I was set on attending graduate school and I decided on Penn State. I received my Ph.D. – I am a computational materials scientist – and I studied creep behavior in nickel-base superalloys, usually found in the most extreme conditions that materials operate in (think of the turbine blades in the hottest part of an airplane engine).

What brought you to Tech?

My husband (Dr. Michael Hargather, Mechanical Engineering) got his dream job at Tech. I was initially hired as the Engineering Education Specialist for the HSI-STEM Department of Education Title III grant. Materials Engineering at Tech was a good fit for my research and I moved over to a faculty position in that department in 2016.

What are you working on now?

I'm running several projects currently. My major field of research is computational materials science. We

study high entropy alloys – equiatomic composition alloys of at least five elements. They have high entropy of mixing, which suppresses the formation of second phases. These alloys are combinations of desirable properties not typically found in engineering alloys, such as being both strong and ductile. My students are looking at deformation mechanisms of these alloys, predicting how they're going to fail, developing methods to look at properties such as stacking fault energy and elastic constants. I also have two graduate students working on diffusion coefficient calculations in metals.

I was approached by a company about advanced additive manufacturing techniques for rocket propellant. We have partnered with the company and just received a Phase II SBIR award from DARPA. I have three graduate and three undergraduate students

on this project, which is fast-paced, exciting, and cutting-edge, and is constantly challenging me as a professor. I now truly understand what it means to participate in life-long learning!

I'm also part of a project with LANL that studies containers to see how they fail. The SAVY containers (five quart containers) are used to transport spent nuclear fuel. I am developing a new simulant material for nuclear waste and LANL is working on a better detection process. If the container fails – where does the material go, how does it fail, and which part fails (the filter, the o-ring, etc.)? My part of the project should yield a better simulant material and more advanced detection methods for it.

What do you do for fun?

Chase the children! I love to exercise (I used to do triathlons) and my husband Mike and I are always on Team Hargather for the President's Golf Tournament. My four-year old son, David, wants to do everything like his mama – David loves to golf, he lifts weights with me (he has his own one-pound weights), and riding bikes (he already has a bike with a hand brake).

Our daughter Natalie is just learning to walk – and our lives will never be the same. I also love to garden and I have some historic Zinfandel grapes from Carl Popp – they grow fantastically on Tech Hill. In the spare time I manage to find, I love cooking and traveling and I'm a member of the Socorro Gourmet Club.

What is your favorite part of your job?

Watching students get excited about their research projects. Pursuing a graduate degree is not easy. It's thrilling to see students get excited and have results. In its own way, it is more rewarding than teaching – you get to see your graduate students build their capabilities and confidence over time.

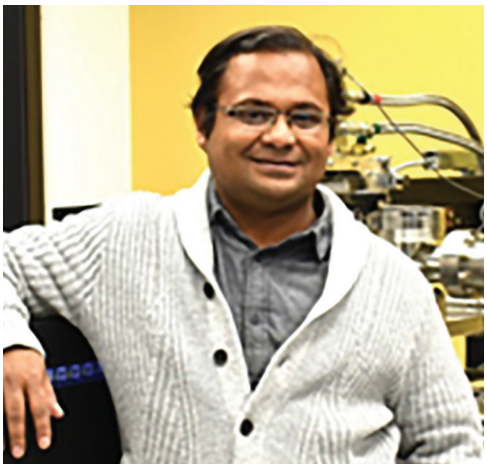
To learn more about Dr. Hargather's research, please visit her department and research lab websites:

https://www.nmt.edu/academics/mtls/faculty/chargather.php

https://sites.google.com/nmt.edu/hargatherlab/

FACULTY NEWS

Materials Engineering welcomes ***Dr. Deep Choudhuri*** as a new Assistant Professor. Dr. Choudhuri earned his Ph.D. in Materials Science and Engineering from Michigan State University in 2009 with a study of the effect of nanostructured chemicals on the lead-free tin-based solders. He then did postdoctoral work at the Institute for Shock Physics, Washington State University from 2009 to 2012 studying the response of metals to shock compression. Since 2012, Dr. Choudhuri has been with the Department of Materials Science and Engineering at the University of North Texas, first as a postdoc and then as a research assistant professor.



Throughout his career Dr. Choudhuri has been extremely productive with nearly 50 journal publications. Most recently, he was first author of a high impact article in *Nature Communications* on the creep of magnesium rare-earth alloys. In the press release for this work, Dr. Choudhuri is quoted, "... the fact that we can peer into atoms and we are able to connect the bonding between atoms with material properties for practical use is amazing. To be able to do that, it says to us, 'what's going to happen 50 or 60 years down the line based on this?' We are breaking new frontiers here."

Dr. Choudhuri will continue the longstanding NMT tradition of excellence in research and teaching.

Mechanical Engineering Associate Professor ***Dr. Ashok Ghosh, PE***, was named 2019 Engineer of the Year at the annual conference of the Albuquerque chapter of the New Mexico Society of Professional Engineers (NMSPE). Joe Higham (*B.S. Mechanical Engineering, 2009*), nominated Ghosh for his extensive career in research, education, community service, and leadership. Ghosh is the first NMT professor to win this award (prior NMT professors have won the Young Engineer of the Year award).

University President Stephen Wells said that Ghosh's award is indicative of the quality of professors and the instruction at New Mexico Tech.

Mechanical Engineering Associate Professor ***Dr. Jamie Kimberley*** has been awarded the Society for Experimental Mechanics (SEM) J.D. Dally Young Investigator Award.

Dr. Kimberley received his B.S. in Mechanical Engineering from the State University of New York at Binghamton. Thereafter he attended the University of Illinois at Urbana–Champaign, receiving his M.S. in Theoretical & Applied Mechanics and his Ph.D. in Aerospace Engi-

neering. Upon completion of his Doctoral degree he joined the Department of Mechanical Engineering at Johns Hopkins University as a postdoctoral fellow. He joined New Mexico Tech in August 2012.

Dr. Kimberley's research interests focus on the experimental characterization of materials subjected to high rate loading, and the development of models describing the associated material response. Research topics have spanned several orders of magnitude in length scale: from the impact response of Micro Electromechanical Systems (micron scale) to asteroid disruption studies (Kilometer scale). Current topics of interest focus on problems of dynamic micromechanics in coupled materials systems (e.g. mechanoluminescent materials and reactive material systems).

Two NM Bureau of Geology & Mineral Resources Staff Named Fellows of the Geological Society of America

Dr. Virginia McLemore and Dr. Matthew Heizler will be recognized at the Presidential Address and Awards Ceremony held at the Annual Meeting of the Geological Society of America, held in Phoenix, Arizona in September 2019.

Dr. Virginia McLemore (*B.S. Geology & B.S. Geophysics, 1977, M.S. Geology, 1980*) is Principal Senior Economic Geologist and Minerals Outreach Liaison. She is honored for her sustained record of distinguished contributions to the field of geoscience research. She has also been notably productive in applied geoscience, and training of geologists.

Dr. Matthew Heizler, Associate Director of Labs and Senior Geochronologist, is named for his sustained record of distinguished contributions to the field of geoscience research, particularly in the field of argon geochronology. Matt's 200 published papers underscore his remarkable productivity, but the salient characteristics of his career are his scientific originality and perseverance.

The U.S. Department of State and J. William Fulbright Foreign Scholarship Board have announced that ***Dr. Richard Sonnenfeld,*** Professor and Chair of Physics, has received a Fulbright U.S. Scholar Program award to travel to Australia for atmospheric physics. He will research at Curtin University in Perth and Kalgoorlie as part of a project to study the process of lightning attachment to tall structures in the energy industry.

Recipients of Fulbright awards are selected on the basis of academic and professional achievement as well as record of service and demonstrated leadership in their field.

IN MEMORIAM - FACULTY AND FRIENDS

Charles “Chuck” Patrick Campbell

Professor Emeritus, Technical Communication

Charles “Chuck” Patrick Campbell was born in Tacoma, WA, in 1937 and passed away March 10, 2019. He and his parents moved to Los Alamos after World War II, when his father became part of the effort to convert the Manhattan Project labs to post-war uses. They moved again to Colorado just as Chuck was entering high school; eventually he would receive Bachelor’s and Master’s degrees from UC Boulder, with a concentration in English literature. His studies were interrupted, however, by a two-year sojourn in the Navy, where he spent his time on an LST (Landing Ship, Tank – or Large Slow Target) in the Pacific.

While at University, Chuck met and married his first wife. When they confessed to friends that they’d become disenchanted with their childhood faiths, the friends introduced them to the Unitarian (later UU) Church of Boulder. This encounter was the beginning of Chuck’s 59-year pilgrimage as a Unitarian Universalist.

In 1964, Chuck was accepted into a Ph.D. program in Boston. Once there, however, he realized his fellowship wouldn’t cover living expenses, and so he began to pursue other lines of work. He taught literature part-time at two local colleges, and found work with Arthur D. Little, a Cambridge consulting firm. During this time, he and his first wife decided to go their separate ways.

Tamara (“Tommi”) Wadsworth came into Chuck’s life in 1967. When they married the next year, he became an unofficial Dad to her three children, Dennis, Peter, and Jill. Tommi was also a UU, and together they became active in Boston’s Arlington Street Church. There they befriended a young lawyer named Sue Spencer, who remained friends with them through the years, and who would eventually become a UU minister. In 1979, the Campbells moved to Albuquerque to be closer to Chuck’s parents.

Chuck didn’t immediately find a teaching job in Albuquerque. Ever resourceful, he went to work for Mayflower, and for a few years drove moving vans all over the country. In 1982, he and Tommi found teaching jobs at the University of Albuquerque, and when it folded, he began a Ph.D. program at the University of New Mexico. When he earned his doctorate in Technical Communication at age 51, he was fortunate to land a tenure-track position at NMT in 1987; he taught at Tech for 12 years, retiring in 1999.

Although Chuck had been a “band geek” in high school, his love of the tuba blossomed after he came to Albuquerque. He first played with a German band, Die Polka Schlingel; other bands included the High Desert Brass Quintet and the New Horizons Band. In later years, the traditional jazz of New Orleans was his primary passion, and for 17 years he held the Tuba position with the Route 66 Revelers.

When Tommi died in 2011, Chuck and his old friend Sue Spencer resolved to stay in touch. Their long friendship blossomed into “something more,” and they married in 2012. From then until Chuck’s death, they felt blessed to be together, and when Sue became the Developmental Minister in Las Cruces, Chuck became the best clergy spouse one could ask for.

Chuck was diagnosed in 2007 with Chronic Lymphocytic Leukemia (CLL). For many years he was active despite this life-threatening illness – traveling, playing music, enjoying the out-of-doors, going to church, and generally finding joy in life.

Memorial gifts may be made to the Ministerial Internship Fund of First Unitarian Church of Albuquerque (3701 Carlisle Blvd. NE, Albuquerque, NM 87110), to the ACLU Foundation of New Mexico (P.O. Box 566, Albuquerque 87103), or to the New Orleans Traditional Jazz Camp Scholarship Fund (P.O. Box 15851, New Orleans, LA 70175).

Gerardo "Gerry" Wolfgang Gross

Professor Emeritus, Geophysics

Dr. Gerardo "Gerry" Wolfgang Gross passed away June 16, 2019. He was born in 1923 in Greifswald, Germany, and in 1939 emigrated to Argentina, obtaining a Ph.D. from the University of Córdoba. After WWII he moved to New York to join his family. He earned a second Ph.D. in Geophysics from Penn State University.

He joined the faculty at NMT in the early 1960s. He later noted that only one or two of the major streets in town were paved at that time. He was married to Dr. Ruth Filsinger Gross, who for decades constituted a one-woman NMT language department, teaching German, Spanish, and French.

Gerry's training was in electrical methods in geophysics. He taught and used in his research conventional shallow electrical geophysics, such as resistivity surveys, but his most significant contributions were in the measurement of the dielectric properties of ice with low and varying 'doping' with ionic solutes. This work has had application to the stratigraphy of ice sheets, but is mainly important for understanding the electrification of clouds during thunderstorms.
In addition to this electrical work, he set up one of the first laboratories in the US for the measurement of tritium in natural water samples using electrolytic enrichment. He ran this lab from the early 1960s to the mid-1980s, using it mainly to understand NM groundwater recharge processes in New Mexico.

Although Gerry's appointment was as Professor of Geophysics, most of his teaching and research were in the Hydrology program. He worked closely with Dr. Mahdi Hantush and his successor, Dr. C.E. Jacob, in the 1960s, and played a critical role in the history of the department when Jacob died suddenly of a heart attack in 1970. Gerry launched a heroic one-man effort to keep the Hydrology program alive and to find a worthy successor to Jacob. He accomplished this by bringing in several leading groundwater theoreticians to serve one-year temporary appointments teaching and doing research; ultimately, in the mid-1970s he succeeded in hiring Dr. Lyn Gelhar from MIT as Director of the Hydrology program, assuring its continuation.

He loved the desert, the mountains, and the tranquility of life here. He had a strong affinity for cacti; he was a member of the Cactus & Succulent Society of America and collected cacti from all over the world. The addition of a sunroom to the back of their house provided a special place for his collection that, at its peak, numbered 200 or so.

Gerry was an exceptionally kind and caring person. He scrounged RA support for many Hydrology grad students in an era when that was more difficult than today, and is remembered fondly by them. One former graduate assistant, Roberta Hoy (*B.S. Geology, 1977 and M.S. Hydrology, 1979*) spoke at his funeral service:

"Those of us who were fortunate enough to take classes from and/or work for Dr. Gross had to:

- Expect challenging hydrology assignments and learn about fundamental, but obscure, research such as the electrical properties of ice with and without impurities,
- Learn to build and repair lab equipment, some of which had been parts of many other things before becoming something else,
- Drive to remote areas, sometimes in World War II surplus vehicles, to check water levels in deep wells while trying to keep the local cows from trampling the field equipment,
- Respond, with something other than a blank stare, to instructions in German, Spanish, English, and the occasional French, and
- Be challenged to do one's best professionally and personally by someone who

cared about you and your life, and be welcomed into his home to enjoy delicious meals and pleasant social gatherings with all the family!"

Gerry lived a very long, and very largely happy, life. He had an incisive mind and contributed immensely to both the teaching and the research missions of NMT. He left an important legacy for NMT, the E&ES Department, and especially the Hydrology program. He was selfless and generous. He had a loving family and a deep faith in God. His was truly an example of a life well lived.

The family has requested any memorial gifts be made to the New Mexico Boys and Girls Ranches, Inc., 6209 Hendrix Rd. NE, Albuquerque, NM 87110-1334.

Laurel Wilkening

Dr. Laurel L. Wilkening, long-time New Mexico Tech friend, passed away June 4, 2019. She was born in Richland, WA in 1944 and raised in Socorro, NM, while her father, Dr. Marvin Wilkening, was a Physics professor, Langmuir Lab Committee Chair (1963-1969), and Dean of Graduate Studies at New Mexico Tech. While attending high school in Socorro she took classes at NMT, including German, humanities, and calculus.

She had a passion for science, earning a B.S. in 1966 at Reed College in Oregon and a Ph.D. from the University of California at San Diego in 1970, where she was one of the first to examine a lunar rock from the Apollo 11 mission.

Her academic career began at the University of Arizona as a professor of geological chemistry. As she said, "Being a woman in the right place at the right time for her career," she changed to administration, where she became department head of the Lunar & Planetary Laboratory and the school's first dean of sciences. Later, she was the first woman provost at the University of Washington in Seattle. In 1993 she moved to the University of California at Irvine and became its first woman Chancellor before retiring in 1998.

Wilkening was a prominent member of the science community and took a special interest in the U.S. space program, serving as vice chair of the Advisory Committee on the Future of the U.S. Space Programs, chair of the Space Policy Advisory Board, and vice chair of the National Commission on Space under President Ronald Reagan.

In retirement in Arizona, she loved the natural world of the Sonoran Desert. She was an accomplished birder, and enjoyed flying with her husband and appreciating all the different seasons.

She continued to serve on boards for a variety of scientific, academic and environmental organizations. In 2013, an asteroid discovered by UA researchers in 1999 was officially named Wilkening to commemorate her work.

In 2004, Dr. Wilkening and her husband Godfrey Sill endowed the Dr. Marvin H. Wilkening Faculty Development Program in Physics; in 2016 the endowment income was used to establish the Marvin H. Wilkening Graduate Fellowship in Physics.

Laurel was preceded in death by her husband Godfrey Sill and parents Ruby and Marvin Wilkening. She is survived by her brother Wes (Mary) Wilkening and niece Whitney Wilkening. In lieu of flowers donations may be made the Alzheimer's Association at https://www.alz.org/.

25th Annual PRESIDENT'S GOLF TOURNAMENT

Dr. Stephen G. Wells continues the 25 year tradition that has helped more than 350 students complete their education at New Mexico Tech. Proceeds go to support students' scholarly endeavors and the creation of additional resources to support the mission of the University.

SEPTEMBER 12TH & 13TH, 2019

REGISTRATION

TO REGISTER VISIT OUR WEBSITE:

HTTP://NMT.EDU/ADVANCEMENT/GOLF-TOURNAMENT.PHP

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Congratulations to all

COMMENCEMENT









our 2019 graduates!

2019 CAPSTONE PROJECTS

It's All About the (Student) Research

In many disciplines, NMT students must complete Capstone Design Projects as part of their degree work; these may be one semester senior projects (e.g., Technical Communications) to four semester Junior/Senior Design Clinics (e.g., Mechanical Engineering). Most engineering students work in teams on sponsored projects that include all R&D stages - research, design development and review, prototype construction, testing, evaluation, and client presentations.

The following are Spring 2019 NMT student presentations (oral or poster). Some departments provided titles, some abstracts; photos of the students are included where available. Check out department websites for news, activities, student/faculty research information, and more!

Student names are listed left to right to match photo.

CHEMICAL ENGINEERING

HTTPS://NMT.EDU/ACADEMICS/CHEMENG

AMMONIA PRODUCTION FROM BIOGAS

TEAM: *Veronica Espinoza, Miguel Luna, Raymond Sandoval, Vincent Herrera*

CLEANING UP FUSION POWER: DESIGN & OPERATION OF A WATER DETRITIATION PLANT

TEAM: *Logan Blake, Sean Reed, Kyle Mayfield, Victoria Hypes*

PRODUCTION OF LEGHEMOGLOBIN AS AN ALTERNATIVE MEAT FLAVORING SOURCE

TEAM: *Caleb Belchak, Meghan Hill, Jacob Belchak, Alaura Wright, Adrianna Nieto*

PRODUCTION OF POLYLACTIC ACID

TEAM: *Austen Lane, Nick Goodwin, Daniela Salinas, Chad Bellis*

CHEMICAL ENGINEERING
HTTPS://NMT.EDU/ACADEMICS/CHEMENG

PRODUCTION OF CRUDE PHTHALO BLUE DYE

TEAM: *Babatunde Adejumo, Philip Mantos, Houston Maxwell, Sebastian Litchfield*

STYRENE PRODUCTION PLANT

TEAM: *Timothy Thompson, Jeremy Herman, Xavier Chavez, Suchinkumar Patel*

PRODUCTION OF CHLORINE DIOXIDE BLEACH FROM SODIUM CHLORITE AND HYDROCHLORIC ACID FOR USE IN PAPER BLEACHING

TEAM: *Catherine Groves, Margaret House, Quintessa Guengerich, Eric Walker*

MINERAL ENGINEERING
HTTPS://NMT.EDU/ACADEMICS/MINING/

COPPER MINE ECONOMIC FEASIBILITY

The senior design team had the objective of determining whether a proposed copper mine was economically feasible. The students were provided only drill-hole assay data by their advisor, Professor Mojtabai.

The team determined the best mining method for the proposed copper deposit, surface mining, followed by determining the most cost efficient processing of the copper ore, heap leach extraction. Finally, the team members performed economic analysis and calculated that the proposed copper mine had a net present value of roughly one hundred million dollars using a 15% minimum rate of return.

TEAM (photo at left):
John Durica, Bon Durica, and Christopher Vanpelt

2019 CAPSTONE PROJECTS

It's All About the (Student) Research

ELECTRICAL ENGINEERING

HTTPS://NMT.EDU/ACADEMICS/ELECENG

BROOM

The Broad Radio frequency Outdoor Online Monitor is a sensor network designed to determine the feasibility of an electronic warfare testing facility by measuring the electromagnetic quietness of the test site. It is comprised of four weatherproof nodes that can detect and measure signals in the 900–5800 MHz band. The measurements are transmitted to a server that implements a true range multilateration algorithm and plots the results on a map. Project sponsor ICASA@NMT; faculty advisors Dr. Rene Arechiga and Dr. Scott Teare.

TEAM: *Caleb Matheson (lead), Robert Allan, Kyler King, Alejandra Mayorga del Valle, Mitchell Nelson.*

ECHOS

An automatic fall detection and alert system which relies on a mmWave radar sensor and produces a log of activity over time as well as an alert sequence. Information provided by the activity log has been clustered using machine learning algorithms to produce a habit tracking log capable of producing its own alert sequence. Project sponsor Omnius Tech; faculty advisors Dr. Seda Senay and Dr. Scott Teare.

TEAM: *Caitlin Armstrong (lead), Levi Dryden, Jared Macdonald, Riley Myers.*

SMART TARGET DUMMIES

A system designed to return functionality to the target turners at the EMRTC (formerly TERA) 100-yard small arms shooting range. The project provides law enforcement with a dynamic training scenario that replicates real-life situations. The system includes a programmable interface, wireless control, electric actuator, and weatherproof housing. Project clients Sgt. Ed. Sweeney and Det. Christopher Lucero, NMT Campus Police; faculty advisor Dr. Kevin Wedeward.

TEAM: *Jacqueline Baros (lead), Willie Lopez, Alexander Mazarakis, Christopher Ramirez.*

STALKER

A system that can locate malicious RF jamming signals from unknown sources. These signals may interfere with wireless networks that are critical to safety and security. The system employs four software-defined radios that use GPS to self-locate and measure the power of the RF jamming signal. Collected data are combined using a trilateration localization algorithm to determine the most probable location of the RF source. Project sponsor Dr. Aly El-Osery; faculty advisor Dr. Anders Jorgensen.

TEAM: *Alexander Kral (lead), Isidro Gomez, Andrea Grijalva-Sanchez, Eppie Velarde, Jeremy Vorenburg*

SWAMP KOOLEST

A device designed to improve user comfort through smart swamp cooler control; it can interface with multiple wireless temperature sensors to maintain environmental stability. A companion phone app enables the owner to remotely control the system. Project client Nancy Nangeroni; faculty advisors Dr. Aly El-Osery and Dr. Frank Reinow.

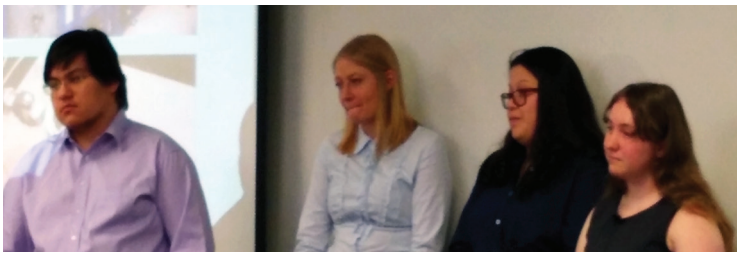
TEAM: *Steven Lukow (lead), Kelsey Harvey, Levi Jungling, Hilda Martin, Colt Welty.*

MATERIALS ENGINEERING
HTTPS://NMT.EDU/ACADEMICS/MATEENG/

DESIGN OF A LIQUID OXYGEN CONTAINMENT SYSTEM

Carbon fiber composites are under investigation for use as external reinforcement of tanks containing liquid oxygen (LOX). The composite may be exposed to LOX, compromising its structural integrity due to low-temperature-induced stresses and LOX penetration; therefore, the composite must be characterized under simulated circumstances.

This project proposes a test container design that permits slow strain rate testing of carbon fiber composites fully submerged in LOX for extended periods. The design of the container takes into account premade samples and tensile testing equipment already in use at Jacobs Technology Inc. It includes a method to safely dispose of excess oxygen gas, and incorporates heated grips such that the epoxy used to grip the composite specimen is not compromised by excessively low temperature caused by submerging tensile samples in LOX.



TEAM: Ian Shortt, Aysha McClory, Sara Franco, Kaleigh Anderson

DESIGN AND DEVELOPMENT OF A CONTINUOUS AEROSOL GENERATOR

Aerosol generation is useful in a variety of applications from medical inhalers to aerosol deposition, and has been shown to improve corrosion resistance, wear resistance, and electrical conductivity of the sample. The goal of this research is to develop and characterize an aerosol generator capable of continuous generation of nanoparticulate aerosols with constant mass flux, tunable mass flux, operation under vacuum conditions, and incorporation of a mechanism for deagglomeration of nanoparticles. Most aerosolizers are batch processes that are incapable of continuous aerosol deposition.

Our design was constructed to allow continuous deposition in a vacuum chamber, a process not yet performed by any other system. The design work addressed many of the problems identified with existing aerosol generation systems. Problems such as agglomeration of particles, back bubbling, limitations in flow rates, etc., were experienced throughout this project. The final prototype that was established proved the idea of a continuous aerosol system. The design produced continuous dry powder aerosols under vacuum conditions for extended periods of times. Some of the system characteristics such as the tunability of aerosol mass flux was achieved by varying the molality of the input powder suspension. The applicability of the aerosol generator to the process of aerosol deposition of ceramic particles (e.g., TiO2) was demonstrated on multiple substrates.

TEAM: *Robert Calvo, Aimee Harrington, Matthew Dougherty, Eric Galindo,*

2019 CAPSTONE PROJECTS

It's All About the (Student) Research

NOVEL METHODS OF SOLAR CONNECTOR SEPARATION

Solar power is one of the most promising and abundant energy sources of the future. Modern solar panels utilize positive locking single contact electrical connectors routed through a sealed junction box that allow for simple panel exchange and efficient design. However, significant failure caused by environmental exposure coupled with the high electrical current observed in operation is common. We have researched and developed novel alternative solar connection systems that alleviate dangerous and often catastrophic failure by indefinitely eliminating electrical contact. Results are augmented by performing extensive testing to mirror encountered environmental conditions, which serves to provide a unique perspective on the applicability of our connection alternatives.

The challenge is coordinated by the National Renewable Energy Laboratories (NREL). Project sponsor Management Sciences, Inc. (MSI) with team partners VAMCO and Ampenol. The team has now won the first and second (of three) stages of the American Made Solar Grand Challenge competition, a nationwide competition to develop improved and reliable solar systems as part of the renewable energy initiative. See the video of NMT's solar connector design at https://www.herox.com/SolarPrize/round/354/entry/22573.

TEAM: *John Huckabee, Matthew Read, Kerry-Ann Stirrup*

MECHANICAL ENGINEERING

HTTPS://NMT.EDU/ACADEMICS/MECHENG/

Editor's note: *Due to space limitations, only four of the 2018-2019 Mechanical Engineering projects - out of more than 20 - are highlighted in this issue. Two new projects (started in Fall 2018), and two ongoing projects that have been (featured in previous issues) are included. The department will soon be adding a Junior/Senior Design Clinic page to their NMT website that will include posters and descriptions of all the projects; check them out!*

MUSICAL HOPSCOTCH

James Ruff, Adjunct Instructor and project sponsor, began working on a musical playground at Cottonwood Valley Charter School in Socorro. After building a xylophone, he challenged a student team in Fall 2018 to build a hopscotch square prototype.

The hopscotch project entailed three design/build tasks: the box, the spring, and the sound; these called for mechanical, electrical, and programming engineering skills. The team researched, designed, and built a 14" x 14" x 4" prototype by the end of the Spring 2019 semester. The box (*shown in team photo*) plays a different tone on the C scale when a kid steps on the top, bottom, right, or left side of the cover; all four tones play when the center is depressed. Ultimately, the team hopes to build three boxes for the musical playground.

TEAM: *Ethan Cooper, Luis Estrada, Matthew Fisher, Cesar Tena, and Marco Valenzuela*

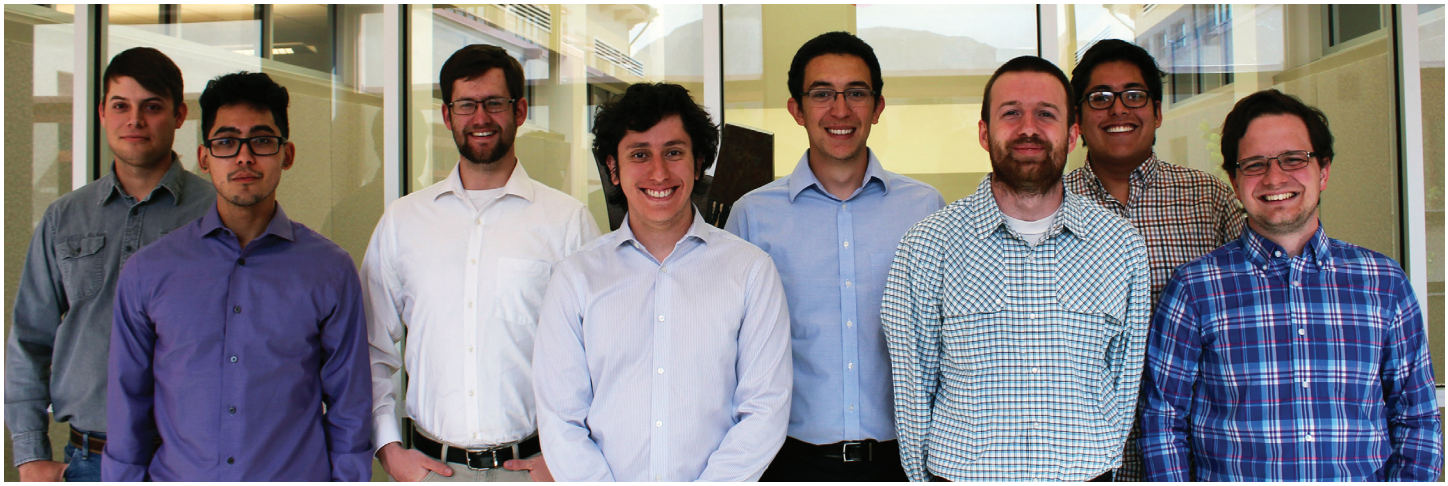
MECHANICAL ENGINEERING
HTTPS://NMT.EDU/ACADEMICS/MECHENG/

BATTLE BOT

This student-originated and student-driven project, to design, build, and compete a three-pound-class battle bot, was proposed for Fall 2018 by then-seniors Troy Pacheco and Christopher Vigil. They arranged funding through NMT's Student and University Relations office, and coordinated and co-led a team of six other students to design and build a battle bot for competition in Dallas, TX, in June 2019. The team started from zero (only one student had battle bot experience), and pursued a unique design, not based on any existing models. This gave them a wide scope when brainstorming – any crazy, wild idea could be considered and analyzed from an engineering perspective (e.g., including weapons like a flail or a piston-actuated ball and chain).

By the end of Spring 2019, the team had a functioning 3 lb. battle bot, with 3D-printed and machined metal student made parts. Three members went to the Dallas competition; they weren't expecting to win – and they didn't – but the bot passed all competition inspections and met all requirements, which was encouraging for a first-year entry. Future plans include a new design and build, returning to the competition, and investigating the possibility of organizing local battle bot competitions.

TEAM: *Stephen Jolliff, Emilio Herrera, Nick Koenig, co-lead Troy Pacheco, co-lead Christopher Vigil, Macs Brown, Dyllian Powell, and Noah Schweitzer.*



STEINHOFF PROSTHETIC RESEARCH INSTITUTE (SPRI)

Editor's note: *The SPRI was originally featured in the Summer 2017 Gold Pan.*

The SPRI project began Fall 2017 with the goal of building a functional prosthetic for Ms. Edie Steinhoff (*shown right)*, NMT Printing & Publications Coordinator (*B.S. Psychology, 2007)*, who lost the fingers on her left hand in a home do-it-yourself project that went awry. Edie received generous donations from anonymous donors for a prosthetic device, which she in turn gave to the design team to create a personalized and functional prosthetic for her. Members of the team were divided into three subgroups (mechanical design, actuators, and controls), and each subgroup was tasked with specific deliverables that contributed to the final prosthetic design.

The original 2017 team began their mechanical design work with background research on the components that would be required to build a successful prosthetic device, and com-

pleted their first working prototype at the end of the Fall 2017 semester. The initial prototypes integrated force sensors that were triggered by muscular contractions in Ms. Steinhoff's forearm as she flexed her muscles. They continued this work into the spring of 2018 and were able to build their second prototype.

In the fall of 2018, the team redesigned the prosthetic with the goal of scaling down the size of the device and increasing the comfort by creating a new mold of Ms. Steinhoff's hand and adding a cushioned lining to the articulating surfaces of the socket. The team also chose to integrate a joystick grip-type control to give Ms. Steinhoff the option to hold a specific grip-type while decreasing muscular fatigue in her forearm. The team completed the new functioning prototype in Spring 2019 and delivered the device to Ms. Steinhoff on April 26, 2019.

Project sponsor University of New Mexico; faculty advisor former NMT professor Dr. David Grow, funded through continued gifts from the generous anonymous donors.

TEAM (2018-2019): *Brendan O'Brien (lead), Robert "Lucas" Baca, Noah Benevidez, Scott Garcia, Mande Hudson, Laura Inkret, Dan Puckett, Kiri Welsh.*

ROCKET TEAM

Editor's note: The 2018 NMT Rocket Team mission was featured in the Summer 2018 Gold Pan.

On Saturday, April 13, 2019 at 8:19 am (MDT) the NMT Rocket Team launched their latest generation build from the Spaceport America Vertical Launch Area. NMT Mechanical Engineering students have been designing, building, and launching rockets since 2012 as part of the department's two-year junior/senior Design Clinic. In 2014 the student teams began partnering with White Sands Research and Developers, LLC (WSRDs), and in 2016 they began focusing on Mustang rockets.

The 2019 Mustang VI-BX mission is the first to be designed around an experiment – an all-aluminum nose tip that functions as an innovative airspeed and angle-of-attack sensor, both designed and built by the students. Pre-mission wind tunnel testing was performed by the students to calibrate the instrument. The juniors and seniors also developed most of the on-board systems, including separation, recovery, and data acquisition systems. This year's rocket was 11' long and 6.1" in diameter; it reached a speed of Mach 1.2 an altitude of ~23,500 feet MSL.

Each of the three Mustang missions has been commemorated with a mission patch (*2019 patch shown at left*). Dr. Christina Lohn, President of WSRDs, said, "When we read about launches from other universities, it's all about the rocket. In the real world, it's all about the mission, and the rocket is just one part of the mission. New Mexico Tech is the only university that offers a broader, real-world perspective and gives students the opportunity to experience it first-hand. NMT students have to toe the line with requirements from both WSRDs and the NMT faculty. We commemorate each NMT mission with a mission patch precisely because, by the time the students get to launch day, they've already earned it."

TEAM (2018-2019): *Co-leads James Nolan and Dominic Gallegos; Megan Armstrong, Joshua Berson, Benjamin Bohling, Garrett Chavez, Connor Deuschle, Damian Gallegos, Adam Hamm, Justin McLain, Luis Molinar, James Ritter, Kyler Servere, Brandon Turner, Andrew Wancheck. Volunteer John Sanchez.*

Want to help fund a Mechanical Engineering Design Clinic team next semester? Donate online, by check, or by phone!

Online at https://advancement.nmt.edu/sslpage.aspx?pid=275, (scroll to the last Designation option, "Other," and type in the team name), or make a check out to New Mexico Tech and write in the team name on the memo line, or call LaVern Robinson at 575-835-5616.

TECHNICAL COMMUNICATION

HTTPS://NMT.EDU/ACADEMICS/CLASS/UNDERGRAD.PHP

Branding – Doughnuts & Deadlifts

Brands use visuals to communicate their identity, yet there is very little research on how specific brands do this. A case analysis of Doughnuts & Deadlifts, an online-based fitness apparel brand, was conducted to see how the brand uses visuals to convey their values to viewers and what those values are. Models with confident posing, tattoos, and bright colors communicated a value of self-expression, and the visual uniqueness and variety of people conveyed a value of nonconformity. These findings may offer insight for other brands on how to market themselves.

PRESENTER: *Sam Burleigh*

Left to right:
Sam Burleigh, Garrett Massey, and Ali Lenox

WEB NAVIGATION AND VISUAL IMPAIRMENT

Web navigation is rooted partially in information architecture. Research in this area has revealed four fundamental structures through which navigation can be achieved: hierarchical, linear or sequential, organic or "webbed," and matrix. This study explored the relationships between web navigation, user experience, visual impairment, and accessibility to better understand which navigation structures are best suited for users with visual impairments. The results indicate that the context of the task is the primary factor dictating which navigation structure is best suited for different users.

PRESENTER: *Garrett Massey*

RISK COMMUNICATION

Risk communication informs people's understanding and shapes their actions to minimize negative consequences. Research into the role that data representation plays in understanding risk has been studied for broad populations but has not been applied to finite populations such as science and engineering students. Currently in the field there is an assumption that visual representations of data increase the understanding of risk communication for all people. The findings of our study challenge the understanding of how best to represent data and require further research.

PRESENTER: *Ali Lenox*

NEW ZEALAND - MAY 2020

MARK YOUR CALENDAR NOW!

Dr. Bruce Harrison, NMT Earth and & Environmental Science Department, and Belinda Harrison, NM Bureau of Geology, will guide a New Zealand Alumni Tour in May, 2020.

Join them and a few of your fellow Techies to enjoy gorgeous geology, beautiful vineyarsds, and amazing food.

To receive more information about this small-group E&ES tour, email james.harrison@nmt.edu.

Lois Phillips, 2018 tour guest, chatting with Bruce and Belinda Harrison in New Zealand

TECHNICAL COMMUNICATION AT NMT

an interview with Dr. Jim Corey

BY DR. STEVE SIMPSON,
CHAIR, CLASS DEPARTMENT,
AND **KYRIE SELPH,**
SENIOR, TECHNICAL COMMUNICATION

NMT Technical Communication (TC) students are welcomed into a community that extends outward from the confines of the NMT campus into the real world. Beyond the classroom, our involvement in the Society for Technical Communication (STC) and weekly "family dinners" means the TC community has become a unique place for academic, personal, and professional growth. From the first TC class to the moment they move their tassel, TC students are prepared for the rest of their careers as confident, capable experts in their field.

In anticipation of the 2019 49ers TC alumni event, Dr. Jim Corey, founder of the NMT TC program, sat down with Dr. Steve Simpson, the current department chair. During their visit, Corey shared the story of the creation of the cutting-edge NMT Technical Communication degree program, one of the few in the United States at the time.

TECHNICAL COMMUNICATION WAS THE DEGREE TECH NEEDED

"In a technological and thus specialized society, a need exists for trained communication experts who can smooth the way for communication among specialists and open the channels of communication between specialists and lay people," wrote Dr. Scott Sanders on November 11, 1982. Sanders, a former English and TC professor at NMT during the proposal period for the Bachelor of Science in Technical Communication, noted "The nature of their occupation demands a broad education, in which a general, critical sense and flexibility of intellect are developed."

A 1980s era New York Times article recognized NMT as a first rate school, mentioning the humanities department as the bright spot; the piece prompted Dr. Kenneth Ford, the president of NMT at the time, to encourage Dr. Corey to create the TC degree program.

WHY NOT MAKE IT A BACHELOR OF SCIENCE

Sanders said, "Humanities Chair Jim Corey was a strong supporter of the effort to create the TC degree, as was then colleague M. Jimmie Killingsworth. [...] Colleague Jack McKee was co-chair of the committee set up to propose the degree."

Corey had his sights set on getting the B.S. in Technical Communication program approved. The degree was nothing more than a draft on Corey's desk, and the Bachelor of Arts program at Tech was being dissolved right around that time. There weren't many TC programs in the country to compare his draft to, so Corey set out to find one.

Jim Corey visiting Ireland, ~1974

Rensselaer had an eight-week seminar for TC teachers, where Corey had his draft reviewed. Following his return to NMT, Corey called a meeting with his faculty, Page Christiansen, and John McKee. After a quick rewrite to present the program as a Bachelor of Science and the approval by more faculty, the draft sailed through to the new president of NMT, Dr. Lawrence Lattman, and the vice president, Dr. Carl Popp.

The TC program was approved in the early 1980s; Corey was able to hire two more faculty in 1988, with the help of outstanding faculty members Scott Sanders and Carole Yee. Chuck Campbell and Lynn Deming (who pioneered the editing class here at NMT) were chosen.

"Everybody was really invested in it... We got a lot of support from around the campus,'' said Deming about the TC program.

The department received a grant from Hewlett Packard for $300,000 worth of equipment that year to

renovate a classroom in Cramer Hall, which became the place for TC students to work together and grow as a community.

The TC department was well on its way to success. The first TC students took many of the same courses today's students take, including editing, visual communication, media studies, internship, and more.

"There were probably a dozen of them who had been kind of hanging on at NMT, either trying for a science degree or math or engineering degree. But their hearts weren't really in hard sciences. All of them quickly switched to TC because it provided them with a contact within the technical scientific fields without having to be a hard-nosed engineer." said Dr. Corey about the newly created NMT TC program.

One of the most notable accolades of the first TC students was the publishing of the 14th volume of a series, co-published by the UNM press, called *Storms Above the Desert*, written by one of TCs first graduates, Joe Chew, with the assistance of Corey. The research documented in the book was completed by TC students in the report writing class, TC 301.

TC alumni and current students have been hired as interns at Microsoft, Disney, Sandia National Labs, and Los Alamos National Laboratory, as well as the NRAO and New Mexico Department of Transportation.

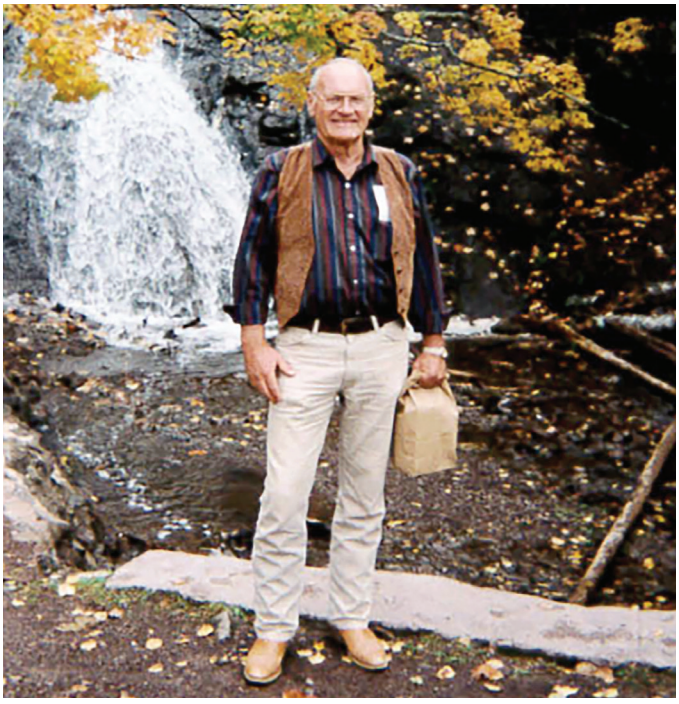
Students today do similar types of experiential learning in classes like Professional Writing Workshop, where they create documents and conduct user experience testing for real-world clients like the Puerto Seguro Safe Harbor shelter in Socorro, which has helped the shelter jumpstart an electronic database for their clientele.

"Students kind of got involved not just in editing and writing, but in really kind of being research assistants [....] Yeah, that's an important element now," said Corey about his TC students.

The TC program could not have been approved without the support and contributions from both the earlier Humanities department and NMT faculty and staff. The program continues to flourish thanks to the commitment of the TC family and the surrounding community. Jim Corey grew to love Technical Communication in the same way many of us did, through his interest in the STEM fields.

I'M A MONTANAN ORIGINALLY

A Montanan born and raised, Corey started his studies at a small town college similar to NMT, with the intention of getting a degree in Humanities and Chemical Engineering.



Jim Corey near Houghton, MI, attending a Council for Programs in Technical and Scientific Communication (CTPSC) conference in the 1980s

As his interests shifted more towards humanities, Corey dropped his Chemical Engineering major and switched his other degree to General Studies (Montana State didn't have an English program). Corey finished his degree with 22 English credits, the maximum offered at Montana State.

"I was just finishing this general studies degree, but had become interested in tech writing", said Corey; this interest prompted him to go to the University of Montana in Missoula to get a graduate degree. Life presented Corey with many opportunities, including some time in Washington and Montana teaching

Continued page 29

ALUMNI SPOTLIGHT
RANDY MARTINEZ

HAVE YOU FOUND YOUR DREAM CAREER?

Randy Martinez (*B.S. Computer Science, Dec. 2009*) loves video games (he's has been writing code and cheats for them since he was 8 years old) and he's now coding video games professionally. Randy followed his dream career path, thanks in part to New Mexico Tech!

Born and raised in Albuquerque, NM, Randy chose New Mexico Tech for college, from start to graduation a Computer Science major. Coming to NMT as a freshman and living in a dorm, Randy went through the same culture shock so many new college students do – the first time living away from his parents, challenging college-level classes and assignments, and moving from a large city to a very small town. Having excellent dorm Residential Assistants (RAs) and participating in student clubs (QuASAR, fencing, paintball, and board games) helped him transition and find friends in the NMT and Socorro community.

There were memorable Tech moments – Randy's very first day in Socorro, he went through the EMRTC rite of passage, as a loud boom had the dorm windows shaking. He took "Explosives 101" with Dr. Van Romero and Dr. Graham Walsh the first semester the course was offered, noting it was the most fun lab he ever had at NMT. (The students built fireworks and set them off at the gun range. There were two EMRTC field trips – one for a C4 and ANFO explosives demonstration and one for a 120mm tank cannon demonstration.)

His most challenging semester was a tie: the fall semester of his sophomore year, when he took Calculus II and Linear Algebra at the same time, after a summer off from math, and the final semester of his senior year, when he took Compiler Writing with Dr. Lorie Liebrock. The compilers course involved many late nights and cramming, but his team excelled, and he remembers it as "Difficult, but really enjoyable."

Graduating in December of 2009, at the height of the financial and housing market crash, it took about six months to find a job - he contacted a former Computer Science professor, who hooked him up with a CS alum who was working at Bigfoot Networks in Austin, TX. That alum arranged for an interview and Randy landed the job, working there for about a year as a software engineer.

Randy has now worked for several video game companies, in the Las Vegas, NV, San Francisco, CA areas, and now the Los Angeles, CA area. Each company and job has brought new challenges and new skills, including a shift to virtual reality (VR) games. In 2015, Randy pursued a startup of his own, focusing on VR titles. He immersed himself for a year and learned a lot (raising

Randy at La Mina Falls in El Yunque National Forest, Puerto Rco

about $230,000 in venture capital); he felt it was a huge stepping stone, "like getting an MBA in terms of hands-on experience." Following that experience, he worked at Crunchyroll (a popular anime video streaming platform) coding the client for their new video streaming platform VRV for the PlayStation 4. He's proud of that work; the code was tight and elegant.

He's also worked on Base Blitz, a nontraditional virtual reality (VR) game funded by Oculus Studios – it's set in a virtual reality world, but plays like a tabletop game, with incorporated stereoscopic 3D immersive elements (projectiles, explosions, etc.). Another VR PS4-exclusive game followed, Firewall: Zero Hour, a first-person shooter and Randy's first AAA VR title. He improved the refresh rate from about 30 frames per second (fps) to 60 fps and optimized the network code. Currently he's with FoxNext/21st Century Fox in Los Angeles, working on an Avatar mobile game (details coming soon). He's

looking forward to the time the game goes live; in mobile games, he noted, "the real work begins after the game is released" (e.g., updates, new content, etc.).

Outside of work, Randy has many interests. He and his boyfriend Anthony got a black and white Portuguese Water Dog three months ago; Zorro the puppy (born on Christmas Day, 2018) adorably demands a lot of attention. He's had the opportunity to travel (to Puerto Rico a few years ago). While he was in the San Francisco area, Randy earned his certification in scuba diving. Now in the LA area, he enjoys diving off the Channel Islands. There are kelp forests there, making him feel "like Superman flying over the kelp." It almost makes up for the cold (~50°F) water temperatures in the area. He also enjoys exploring new restaurants, and Los Angeles, of course, offers some possibilities.

Randy believes New Mexico Tech made a huge difference in his life. While at NMT he came out of his shell and came out of the closet, becoming a new person in many ways. As a student he studied programming, math, science, and engineering, but he also learned about working on a team, thinking on his feet, and other important "soft" skills he's used through his career. He appreciates the personal and professional changes Tech brought to his life, and values the opportunity NMT provided him to pursue his dream career.

Randy enjoying his new favorite sport, scuba diving

TECHNICAL COMMUNICATION AT NMT (CONTINUED)

courses in technical writing and American studies. Corey received a Ph.D. in American Studies and got a job shortly after in Saudi Arabia teaching American Literature from 1968-1973.

HOME AT NEW MEXICO TECH

After returning to the US, Corey found himself in Socorro with a one-year NMT visiting professorship, thanks to Howard Silvester, the NMT Humanities chair in the late 1970's. Corey's year at NMT came to an end, and he went back to Saudi Arabia for another two years, during which time Silvester urged him to return to Tech. Silvester retired, and Corey gladly took his teaching position, under Page Christiansen, then department chair. In less than a year, Christiansen stepped down as chair, giving the position to Corey, who was tenured in less than a year and promoted to full Professor.

ADMINISTRATION AND RETIREMENT

Corey spent a few years at NMT as Associate Vice President of Academic Affairs and the Associate Vice President for Research where he instituted a mentorship program for young professors. After the first year, NMT received more Sandia National Labs and National Science Foundation grants than UNM.

Corey returned to teaching NMT TC classes for his last five years before retiring in 2002. He now enjoys his life as an avid world traveler on cruises. Of his five children, three are engineers and the other two work in technology.

Corey said of NMT, "Tech, I think, is probably the best school I ever taught at [...]The students at Tech [...] are the best students I've ever taught. They were just outstanding."

The TC program invites all of our 200+ alumni to our 2019 event during 49er's Homecoming this October 17-20. Contact department chair Dr. Steve Simpson at steve.simpson@nmt.edu to share your story!

NEW MEXICO TECH
SCIENCE • ENGINEERING • RESEARCH UNIVERSITY

Alumni Events Schedule
Fall 2019

August 3
1:00 p.m.

LONDON, ENGLAND - ALUMNI RECEPTION
New Mexico Tech first – a United Kingdom NMT Alumni Reception.
Hosted in association with long-time London residents
Nancy (Biology, 1976) & Mitch (Petroleum Engineering, 1977) Bilderbeck

August 15
6:30 - 8:30 p.m.

OKLAHOMA CITY, OK - ALUMNI RECEPTION
Pearl's Crabtown
303 E Sheridan Ave, Oklahoma City, OK 73104

August 16
6:30 - 8:30 p.m.

KANSAS CITY, MO- ALUMNI RECEPTION
Jack Stack Barbecue – Freight House
101 W 22nd St #300, Kansas City, MO 64108

August 16
7:00 p.m.

DETROIT, MI - ALUMNI RECEPTION
Kid Rock's Made in Detroit
2645 Woodward Ave, Detroit, MI 48201

September 5
6:30 - 8:30 p.m.

LAS CRUCES, NM - ALUMNI RECEPTION
La Posta de Mesilla
2410 Calle De San Albino, Mesilla, NM 88046

September 6
6:30 - 8:30 p.m.

SILVER CITY, NM - ALUMNI RECEPTION
Revel
304 N Bullard St, Silver City, NM 88061

October 1
6:00 - 8:00 p.m.

CALGARY, CANADA - ALUMNI RECEPTION

October 22
6:00 - 8:00 p.m.

MIDLAND, TX - ALUMNI RECEPTION

October 24
Save the Date

AUSTIN, TX - ALUMNI RECEPTION

October 25
Save the Date

SAN ANTONIO, TX - ALUMNI RECEPTION

October 26
Save the Date

CAVERNS OF SONORA, TX - ALUMNI DAYS OF SCIENCE & EXPLORATION

November 8
Save the Date

LOUISVILLE, KY - ALUMNI RECEPTION

November 14
Save the Date

WIPP, CARLSBAD, NM - ALUMNI DAYS OF SCIENCE & EXPLORATION

December 7
Save the Date

KUALA LUMPUR, MALAYSIA - ALUMNI RECEPTION

December 14
Save the Date

CARLSBAD, NM - ALUMNI RECEPTION
Dinner and Christmas on the Pecos

WHEN ALUMNI HELP ALUMNI

BY NANCY BILDERBECK, ALUMNA WRITER

At NMT graduation time, my husband, Mitch (*B.S. Petroleum Engineering, 1977*), was offered his dream job - working for a multinational energy company with a guarantee of international assignments. Mitch always dreamed of travel and our first posting overseas, a year out of NMT, was London. We have been based in the United Kingdom for most of the last 40 years!

Recently, as we approached retirement, we better understood what those years in Socorro afforded us: Mitch worked on every continent except Antarctica; we got a glimpse of so many cultures and had countless experiences; I became an award-winning science educator in the UK. New Mexico Tech was the vehicle which allowed all of that to happen!!

It was time to give back. We knew that Alumni Giving is about VALUE ADDED … not about basics. Most importantly, we strengthened our ties with the New Mexico Tech Office for Advancement and Alumni Relations, making sure our details were always up to date in their records!

Recently, and unexpectedly, an email arrived from NMT. A fellow alum was relocating to London (although any Techie has the skills to navigate such a move) - could we, and would we, help with "insider" information and guidance? Of course we could and would!!

What ensued was the "NMT-Alum-Relocates-to-London Iditarod." The most daunting task was finding a flat (apartment). Navigating the housing market in London is not for the faint of heart! My knowledge of London was the key to identifying where to look.

It took weeks, and a stroke of luck, to find a wonderful place. I introduced the letting (rental) agent to the alum and we were all in constant communication to ensure the success of "the move."

Months later, it was such a joy to go to Heathrow and welcome this fellow Techie to the country I call home (*photo*). It had taken me years to learn the ins and outs of living in England and it was a pleasure to make this information available to someone "new."

This experience highlights the benefits of strong associations among NMT alumni and New Mexico Tech. Mitch and I were thrilled to learn that we could assist other Techies as and when appropriate.

I encourage current students, recent alumni, and all those who came before, to update their personal details with the Office for Advancement and Alumni Relations – email advancement@nmt.edu or call (575) 835-5616.

You never know when you will be *a Techie in need* - or ***a Techie who can help***!

PEOPLE YOU KNOW

1950s

Morris Worley *(B.S. Mining Engineering, 1956*). I have recently moved to My Father's Retirement Ranch in Wickenburg, AZ, after losing my wife of 61 years in January 2018.

I continue to oversee zeolite mining operations for Honeywell UOP at their mine near Bowie, AZ. True retirement continues to elude me.

1960s

Frank Carsey (*B.S. Physics, 1965*) I am a member of Collective Visions Gallery in Bremerton, WA, and this June I had a show of my ceramic sculpture there: "Vessels, Torsos, and... Buttons."

My work comes directly from the modernist art traditions of the 1920's and 30's; my forms are derived from the human figure as the Greek Cycladic artists or Picasso or Klee might have worked -- a powerful language.

I work to add my own tension and abstraction, for example buttons, symbolic of adornment. The surface of a form is integral and critical to our perception of it.

To achieve my surfaces I fire with wood (working in a community of accomplished ceramic artists) in a soda kiln or Japanese-style anagama kiln, both in Seabeck, Washington.

1960s & 1970s

Ted Heath (*B.S. Mathematics, 1969*) and ***Linda Bodenhamer Heath*** (*B.A. Mathematics, 1970*) celebrated their 50th wedding anniversary with a trip to France in April of this year.

They met as undergraduates at NMT while working together in the Drama Club. Their computer careers took them away from NM for 35 years, living in Texas, California, and Saudi Arabia.

Currently, they are both retired computer executives and reside in Placitas, NM. They have two grown sons and two granddaughters. Ted spends his time managing investments while Linda's second career is in art (http://www.lindaheath.com).

1970s

Blaine Gaither (*B.S. Computer Science, 1973*) was granted his 61st US patent, 10,282,371, "object storage device with probabilistic data structure," which uses structures, such as Bloom Filters, to determine if an object is not in the object store. Blaine lives in Nampa, Idaho with his wife Judi.

Harry Briley (*B.S. Computer Science, 1976)* After retiring from Lawrence Livermore National Laboratory (37 years) as an applications database designer, Harry became involved with the Livermore Heritage Guild, handling three historic properties (a Carnegie Library, an 1880's horse Ranch, and an early 1900's Lincoln Highway auto repair shop). In October 2018 he was voted in as the Board President.

On the faith front, he has been the director of the high-

school-level AWANA club in town for the past 15 years and teaching academic-oriented short courses (Into to Greek, Intro to Hebrew, Pre-Reformation Church History, History of US Churches, etc.).

Harry Briley at Mount of Olives, Jerusalem

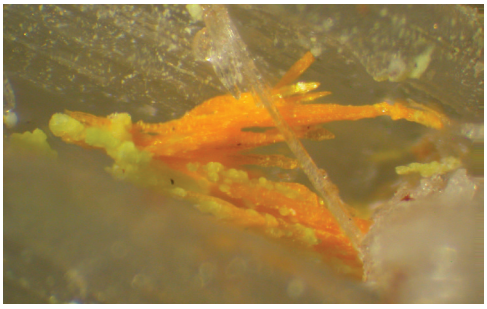
Dr. Nirupam Chakraborti (*M.S. Metallurgical Engineering, 1979*) A special symposium entitled "Evolutionary Algorithms and Artificial Intelligence in Metallurgy and Materials Science - in Honour of Professor Nirupam Chakraborti" was conducted at KomPlasTech 2019, the XXVI International Conference on Computer Methods in Materials Technology held at Zakopane, Poland from January 13-16, 2019.

Currently, Nirupam is a Higher Academic Grade Professor at the Indian Institute of Technology, Kharagpur, India's premier engineering school.

Nirupam Chakraborti honored at the conference banquet with presentations of a traditional Polish hat and axe, and a book on the mountain resort Zakopane.

1980s

Patrick Haynes (*B.S. Geology, 1982*) In January 2018 my ninth new mineral species, **leesite**, was published; it is orange and associated with little yellow spheres of magnesiozippeite. Only about 130 of these were found before the mine was reclaimed and closed up; it is a very rare mineral. An article was published on the Mineral Bliss website about the new species in March 2018, http://mineralbliss.blogspot.com/2018/03/leesite-another-new-species-discovered.html.



Leesite (field of view ~3 mm)

Red maxwellite was my first new mineral, and is named after Charley Maxwell (1923 to ~2007), a name suggested by me. Charley was born in Caballo, NM and was a field geologist for the USGS. As far as geologists were concerned he was "Mr. New Mexico," the go-to guy for NM info. Unfortunately I do not think that he ever attended NMT.

There are apparently only three NMT alumni who have minerals named after them: moi (Haynesite), Dr. Terry Wallace (Terrywallaceite), and a third, whose name I do not know. Many people get lucky and have their first newly discovered mineral named after them. Not me - Haynesite was my fourth.

Haynes in the field

Dr. Jane Cook (*B.S. Materials Engineering, 1987*) After more than four years with the Corning Museum of Glass, and 21 years in the greater Corning. NY area in R&D at Corning Inc., I've decided to take an extraordinary job that will relocate me to Central Pennsylvania. I resigned my position at CMoG, effective May 24th, and began work at the Pennsylvania State University, University Park Campus on June 1st.

I am the new Executive Director of the Museum and Art Gallery of the College of Earth and Mineral Sciences, and Research Professor in that college's Department of Materials Science and Engineering. In the latter role, I have responsibility for the department's hot glass studio as my personal laboratory, and a space for students, residents, and public glassmaking.

This new position is an exciting opportunity for me to grow professionally, as well as to return to my roots in a good old fashioned mining, minerals, and materials engineering college, like Tech (Penn State started as the area's School of Mines, as all good things do...) and to dust off my igneous petrology and crystal chemistry credentials from graduate school in Wisconsin. I'd love to connect up with any Central PA Techies!

Mark Tucker (*B.S. Geophysics, 1987*) is Chief Executive Officer of TTS Pharma Limited, a UK company which is a vertically integrated supply chain manager in the cultivation, manufacturing, and development of the emerging ethical cannabis market.

In May 2019 they announced the successful closing of a Private Equity investment totaling £10.3 million, on the basis of a two-tranche investment. This investment will permit TTS Pharma to become one of the leading global suppliers in this fast-growing multi-billion-dollar industry.

Tucker notes, "It is a great privilege to lead a team of highly experienced pharmaceutical professionals building an exciting portfolio of technologies and products based on world class expertise and industry leading know-how. We are well placed to build on the scientific developments driving this rapidly growing industry and provide cannabinoid products of unparalleled quality and consistency.

"What the old Student Body President is getting up to - educational training supplied by NMT :)"
- Mark Tucker

"Since my early involvement in pre-clinical cannabinoid trials in 2003, TTS Pharma has grown extensively and is now producing and developing a range of innovative and safe cannabis-based products within existing legislation and the evolving regulatory framework."

1990s

Karl Tonander, P.G., P.E. (*B.S. Geological Engineering, 1992, and M.S. Mineral Engineering, 1993*) has been appointed chief executive officer (CEO) of Souder, Miller & Associates (SMA). Tonander, previously a senior vice president, has worked at SMA for more than 25 years, having started with the organization in 1993 and establishing the Las Cruces office in 1995. He has been a member of the SMA board of directors and held positions as an environmental business line manager and chief operations officer for nearly 15 years combined.

Tonander is a past president of the New Mexico Chapter of the American Institute of Professional Geologists and a current appointee to the New Mexico Board of Licensure for Professional Engineers and Professional Surveyors where he regularly

leads sessions on professional ethics. He is an active participant with the National Council for Examination of Engineers and Surveyors, where he presently serves as the chair of the Law Enforcement committee. He is a registered professional geologist in six states and a registered professional engineer in six states.

"SMA continues to represent the best aspects of our evolving industry by quickly integrating proven technology, reshaping the management structure to better service our clients and identifying innovative finance vehicles to make our clients' projects a reality" said Tonander. "Our success in delivering effective technical solutions to our communities and private clients is the direct result of the commitment of our employees."

Kirk Jones (*B.S. Chemistry, 1996 and M.S. Hydrology, 1999*) I moved to the Colorado Front Range after completing my graduate work at Tech and have been here and loving it since. I worked for a couple of engineering firms and then found myself working in mining for several years – a small mining tech firm and then a few years with Newmont. In 2008 I went to business school at Regis University and earned my MBA and have been working in finance and strategic operations since.

I have had the opportunity to blend science and business in various leadership roles, and it has been great for me and allows me to use the skills I gained from my time at Tech in new ways all the time. I took a position with the National Renewable Energy Laboratory (NREL) as their enterprise planner and strategic advisor. NREL is an excellent place with a critical mission.

In 2017, I was offered the position of Assistant Dean for Business and Operations at the University of Denver in the College of Arts, Humanities & Social Sciences and am now the Chief Operating Officer.

I have also begun to take one of my hobbies seriously over the last few years. I completed an M.A. in Creative Writing last year here at the University of Denver and have been working on a novel and several essays. Higher Ed is where I am finally finding myself. It is wonderful to be immersed in a place where great diversity and progressing thought are valued. I am amazed each day by the people that surround me..

2000s

Dr. James Creecy (*B.S. Biology, 2003 and M.S. Biology, 2006*) was recently appointed to the role of Assistant Director of the W. Roger Webb Forensic Science Institute at the University of Central Oklahoma (UCO).

The Forensic Science Institute at UCO is the largest forensic science program in the country and has graduates that work in all areas of forensic science throughout the world.

Samuel "Sammy" Tachie-Menson (*M.S. Mineral Engineering, 2006*) has been working with Freeport McMoRan Inc since graduating from New Mexico Tech. He worked in the Morenci, AZ mine for nine years, then Bagdad, AZ for three years, and the Phoenix head office for just over a year.

He spent four months on a short-term assignment at the Tenke Fungurume operation in the Democratic Republic of Congo just before moving to Bagdad. In January of this year he moved with his family to start an international assignment at the Cerro Verde mine in Peru, where he is currently the mine manager for Haulage.

Samuel has come a long way over the past thirteen years, starting as a mine engineer and coming up through the ranks to be a mine manager.

He credits his success to the education and character he built at Tech and the support from his wife, family and friends. He says ***Thanks*** to Dr. Virginia (Ginger) McLemore (NM Bureau of Geology), Dr. Navid Mojtabai, and the Mineral Engineering faculty. He really enjoys working with Freeport McMoRan and looks forward to many more years of service.

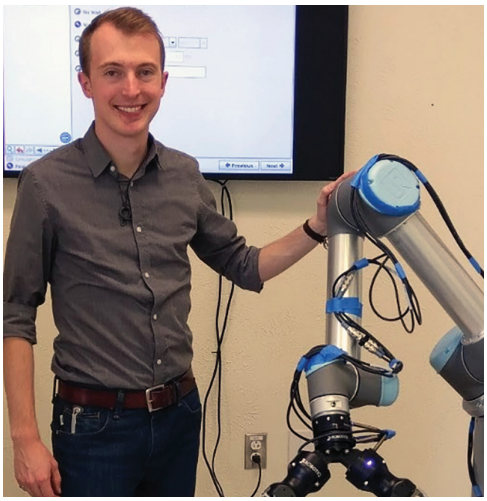
He and his wife, Kate, and three children, Danielle (13), Esther (11) and Gabriel (8) live in Arequipa. They are all learning Spanish and enjoy travelling to see the many wonderful attractions in Peru. They recently took a vacation to Cusco where they visited several world-class attractions including Sacsayhuaman, Moray, Maras, the Sacred Valley and Machu Picchu (*shown in photo*).

2010s

Laura (Stanley) County, O.D. (*B.S. Biology, 2010*) has returned to Socorro, NM as an optometrist after graduating from the University of Houston - College of Optometry. Her husband, alum ***Erik County*** (*B.S. Management, 2007*), is working at New Mexico Tech.

Laura is the daughter of ***Mike Stanley*** (*B.S. Mining Engineering, 1984*), Acting Director of Energetic Materials Research and Testing Center (Socorro), and ***Meri (Rogers) Stanley*** (*B.S. Mathematics, 1985*), Lead Data Analyst at the National Radio Astronomy Observatory Very Long Baseline Array (Socorro) Laura is also the granddaughter of Jean Stanley and ***Dennis "Doc" Stanley*** (*B.S. Physics, 1961 and M.S. Physics, 1964*) of Socorro.

Ben Sears (*B.S. Mechanical Engineering, 2018*) recently joined Build With Robots as an Application Engineer. While a student at NM Tech, Ben led an effort to design a sensor array that used force myography and machine learning to control a prosthetic hand on the Steinhoff Prosthetic Research Initiative (SPRI).



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Contact us!

Help us keep you connected. Have you changed your address, email, phone? Do you prefer to save paper and receive NMT communications digitally? Want to share the amazing things you've been up to? To update your contact information, share your news, or just keep in touch, you can;

- ***Log in*** to the NMT Alumni & Friends Online Community at https://advancement.nmt.edu/page.aspx?pid=205&bm=2000806034
- ***Email*** advancement@nmt.edu
- ***Call*** 575-835-5525
- ***Write*** Office for Advancement, 801 Leroy Place, Socorro, NM 87801

Robert Michael "Mike" Boling

B.S. Geology, 1973

Robert Michael "Mike" Boling of Roswell died March 16, 2019 at ENMMC. Mike was born in Blackwell, OK, the eldest son of Bob and Mary Boling. He was educated in the Artesia public schools and later attended New Mexico Tech.

In 1974 he married Jamie Boling in Lima, Peru while he was working for GSI. Mike felt so fortunate to have had those experiences, working in another country and in the jungles of Peru. We all heard so many stories.

He also worked for Phillips Petroleum in Denver before moving to southeast New Mexico in 1983 to work with his dad, Bob Boling, a longtime landman in Artesia. After his father's death in 1991, Mike moved his office to Roswell and worked for himself. Mike loved everything about the oil and gas industry, its people along with researching and promoting new projects.

Mike leaves his wife Jamie; his son Colin and fiancée Vanessa Vinas; and son Blake Boling. He also is survived by sister Jackie Jones and her husband Roger; nieces Pam Jimenez and Savannah Boling; and great nieces and nephew Andrea, Gracie, Janayeh, and Mateo. Mike was predeceased by his brother Mark Boling and niece Emily Flores.

Mike received a kidney transplant in 1998 which we believe to have been from a happy Florida lady. That assumption came from the sheer longevity of the kidney and also that Mike started liking really bright vivid colors.

The family requests donations be made in Mike's honor to DonateLifenm.org.

Merle Stephen Dennis

B.S. Mathematics, 1973

Merle Stephen Dennis was born September 1, 1950, in Morenci, AZ to Croud and Evelyn Dennis. He passed away at his home in Albuquerque, NM, on July 4, 2018 after a battle with cancer.

George C. Edgerton

B.S. Petroleum Engineering, 1942

George C. Edgerton of Round Rock, TX, passed away on April 12, 2018 at the age of 98. He was born in El Paso, TX on October 31, 1919 to parents Elsie Louise (Noble) and Charles Abel Edgerton.

George married Lillian Jeanette Gunter on July 5, 1939 and they had six children. They celebrated 30 years together until Lillian's passing in 1969. George later

married Betty Ann Bradley and gained two stepsons.

After obtaining his degree from New Mexico School of Mines, George went to work for Humble Oil and Refining Co. (later Exxon Corporation) as a petroleum engineer. He retired as District Superintendent in 1979 after 40 years of service.

While living in Abilene, he was an executive member of the United Way and found great joy in his service to others. George had many hobbies including his favorites, fishing, hunting, and golfing. He was an avid gardener and founder of the Horseshoe Bay Community Garden. He was an active member of St. Paul the Apostle Church in Horseshoe Bay, and up to the age of 88, he spent many hours delivering Meals on Wheels to the "elderly" of his community. He also served on the MUD Board and the POA of Horseshoe Bay.

Some of his greatest joys came when the family and grandkids came to Horseshoe Bay creating lifelong memories by playing tennis, swimming, putting on plays, singing and fishing. His children gifted him with a golf cart when he retired and there were many rides, parades and driving experiences throughout the years.

Preceding George in death were his wives, Lillian Gunter Edgerton and Betty Ann Bradley Edgerton; his son George Gunter Edgerton; and granddaughter Anna Kathleen Edgerton Woods.

Survivors include children, Joleen Edgerton Boyer (Gerald), Gerald Craige Edgerton (Jan), Frederick Thomas Edgerton (Claudia), Mark Andrew Edgerton (Sarah), Richard Vincent Edgerton (Mary Beth), and Sally Edgerton, wife of George Gunter Edgerton (d.); stepsons, Balon Buchanan Bradley (Anne), and Barrett Blake Bradley; 13 grandchildren; 3 step grandchildren and 26 great-grandchildren.

Memorial contributions may be made in George's name to the Society of St. Vincent de Paul at P.O. Box 81511, Austin, TX 78708.

Ralph Gerding

Army Specialized Training Program (ASTP), 1943

Ralph Gerding of North Ridgeville, OH, passed away Thursday, February 14, 2019. He was born in Cleveland and had been a resident of North Ridgeville since 1957. Ralph worked as a tool and die maker at MTD before retiring in 1988.

In 1943, as an Army veteran serving in WWII, he attended the Army Specialized Training Program (ASTP) at the then New Mexico School of Mines. This was a program designed to give special college training to young men already in the military. The ASTP supplied the great majority of students to the School of Mines during the years 1943 to 1945. Under this program, the school's traditional emphasis on engineering courses gave way to a greater focus on physics and mathematics.

He was a member of St. Peter Church, former member of VFW Post 9871, Knights of St John, American Legion Clifton Post in Fairview Park, member and past president of West Branch Rifle and Pistol Club, life member of NRA and Ohio R&P Aircraft Owners and Pilots Assoc. He enjoyed hunting and competitive shooting, flying, and scuba diving.

Survivors include his daughters Lin (Gerald) Matus and Nancy Partyka; sons Dennis (Mary) and Jeffrey; grandchildren Dana (John) Thain, Kara (Christopher) Starkey, Joseph (Kristina), and Samuel Partyka, Andrew, Rebecca, Evan, Kyle, Bradley and Matthew Gerding; and 8 great-grandchildren.

He was preceded in death by his wife Marie; parents Albert and Blanche (nee Bennett); sons David and Kenneth; son-in-law David Partyka; sisters Thelma Dowman and Doris Frantz; brothers Albert, Edward, Leonard and Norman.

Memorial contributions can be made in his honor to St. Peter Church, 35777 Center Ridge Rd., North Ridgeville, OH 44039.

Claudio Juan Gonzales

B.S. Metallurgical Engineering, 1976

Claudio Juan Gonzales was born June 24, 1953 and passed on August 4, 2018. He is survived by his wife, Margaret Jaramillo-Gonzales; children, Juan Claudio, Teresita Maria, and Sebestian Enrique; granddaughter, Audrie Ana; four sisters, and one brother. He was preceded in death by his parents & two siblings.

Claudio graduated from Valley High School in 1971; after attending New Mexico Tech he earned an MBA from Florida Southern College in 1984, and became a P.E. in 1995.

He participated in sports, was a black belt in Tae Kwon Do, and refereed college and high school soccer. He was also a Boy's Club volunteer and a 4th degree Knights of Columbus member. Claudio enjoyed music, fishing, family and friends.

Charles Nathaniel Kellogg

B.S. Mathematics, 1960

Charles Nathaniel Kellogg was born on June 29th, 1938 and passed away peacefully on December 22nd, 2018 in Lubbock, TX.

After growing up on a farm, he went to college for his B.S. at the then New Mexico School of Mines and then earned a Ph.D. in Mathematics from Louisiana State University in 1964. He was a university mathematics professor for 39 years, 33 of them at Texas Tech University, where he also served as Assistant Chair of the Mathematics Department and Associate Dean of Students for the College of Arts and Sciences.

Charles was very active in the Lubbock and North Texas soccer communities for over 45 years: coaching, refereeing, training and mentoring other referees, and serving on multiple committees. He is survived by his children Denise (Eric) Johansen, Judy (Don) Willingham, and Kevin Kellogg (Tracy Korodaj); granddaughters Meredith (TJ) Fly, Kayla (Derek) Pyke, Natalie (Fernando) Hernandez; great-grandson Nolan Fly; and sister Joanne Huenergardt;. He was preceded in death by his parents, a sister, and his beloved wife of 51 years, Nedra.

Throughout his life, he was a leader and teacher, always going out of his way to help others. He will be missed so much. The family requests donations be made to the Texas Tech Emmett Hazlewood Scholarship Endowment at https://bit.ly/2T5L831.

Colonel Allen J. Lovelace

Master of Science Teaching, 1989

Colonel Allen J. Lovelace went to be with his Lord early in the morning of August 21, 2016 after a battle with bone cancer. He was born on May 5, 1932 in Krum, TX to Charles Carlton Lovelace and Beatrice Inmon Lovelace.

Allen grew up in Carrollton, Texas, graduating from Carrollton High School., then attending North Texas State University, where he received a bachelor's degree in biology with a strong minor in chemistry. He served three years in the United States Army as a

photographer. After his military service, Allen returned to North Texas State to complete his work toward a master's degree in biology and education. During this time, he met the love of his life, Caroline Cole. After Allen and Caroline graduated, they married and became a truly united couple for 58 years.

The couple relocated to Roswell, NM, where Allen began a long career at New Mexico Military Institute, teaching biology for 36 years and eventually becoming the head of that department. Many cadets still recall his humorous ways of relating biology concepts to them. During his years at NMMI, Allen had a summer occupation which utilized his broad knowledge of biology, working with a crop inspection agency that advised local farmers what, if any, pest-control treatments their crops required.

As might be expected of someone with his background in biology, Allen kept an immaculate yard and grew beautiful roses each summer. He loved chess, playing tournaments both in person and via the mail. He was also always ready for a game of Mexican train dominoes.

Allen's love of family always came first. He is survived by his wife and Christian helpmate, Caroline Cole Lovelace. He is also survived by his daughter, Patty Lovelace, and his son, Ben Lovelace, both of Roswell; they will be forever grateful for his Christian influence in their lives. Also surviving Allen are his three grandchildren, whom he adored, John Lovelace, Josh English, and Carrie Dillard. Survivors also include Allen's brother and sister-in-law, Charles and Nancy Lovelace, and his sister and brother-in-law, Ann and Danny Andersen.

The family feels Allen would have liked contributions to be made to the Music Memorial Fund or the Silver Chords ministry at First United Methodist Church, 200 N. Pennsylvania Ave., Roswell, NM 88201.

Philip "Phil" Alan Strassle, Jr.

B.S. Mechanical Engineering, 2006

Philip "Phil" Alan Strassle, Jr., a generous and caring soul with a wit and humor that would make the gloomiest day seem bright, passed away in Houston, TX on December 4, 2018. He was born in Hobbs, NM on May 17, 1982.

He grew up in Texas, New Mexico, Arkansas, and Oklahoma areas where he found a love for baseball, green chile, and all things mechanical. Philip enjoyed off-roading, fast cars, guitars, and generally anything that was loud. He traveled the world with his love, Belinda, exploring Europe, the Caribbean, and the distant shores of Hawaii three times.

Known to his family as P.J., he is survived by wife Belinda Owen (*B.S. Mechanical Engineering, 2004),* father Philip Strassle, Sr., mother Patricia Strassle, brother Michael Strassle and his children Lacy and Owen, grandparents George and Emily Strassle, brother-in-law Jerry Thomas and his children Jaimen and Jax.

He leaves behind many friends from coast to coast and around the world who love him dearly. Phil will always be remembered as someone who made everyone feel welcome, could make anyone laugh, was always there for his friends and family, and would always yell at people to put their shirts on. Philip was generous to a fault to all those around him, especially his nieces and nephews.

The family asks that donations in Philip's name be made to New Beginnings Ministry, P. O. Box 233, Houston, AR 72070.

Dr. Willi Volksen

B.S. Chemistry, 1972

Dr. Willi Volksen passed away peacefully on December 28, 2019, surrounded by his family. Born in Recklinghausen, Germany he immigrated to America in 1967.

After receiving his Ph.D. in Polymer Science from UMass-Lowell, he completed his post doctorate study at Caltech and then enjoyed a distinguished 38-year career with the IBM Research Division at the Almaden Research Center in San Jose.

Willi connected with all using his intelligence, snarky humor, and willingness to help while embracing a love of family, music, soccer, and food. His motto, "Do something right or don't do it at all" resonated with all who knew him.

Willi is survived by his loving wife of 46 years, Ruth; devoted children Vanessa Bryan (Robert F. Bryan III) and Russell Volksen (Annie Sertic); grandchildren, Annabelle Bryan, Robert F. Bryan IV, Ashley Bryan, and Audrey Bryan

In lieu of flowers, the family requests donations to The Leukemia & Lymphoma Society.

George "Harvey" Westbrook

B.S. Petroleum Engineering, 1960

George "Harvey" "Westbrook passed away peacefully at home with his family, after a lengthy illness, on Tuesday, May 7, 2019.

Harvey, a U.S. Navy/Marine Corps veteran, spent 35 years with ConocoPhillips, working in the Rocky Mountain states, offshore Louisiana, Texas (including Houston headquarters), England, Scotland, and the North Sea.

He retired in 1994 as Director of Regulatory and Government Affairs, Upstream, North American Production; his work involved resolving issues with state agencies, Native American tribes, and the Minerals Management Service.

In his interactions with New Mexico Tech as an alum, he played an instrumental role in fundraising to establish the Langdon Taylor Endowed Chair in Petroleum Engineering, was awarded the Alumni Association's Distinguished Service Award in 1992, and assisted the Petroleum Engineering Department in creating the Industry Advisory Committee, serving as Chair for three years.

After retiring from ConocoPhillips, Harvey served as President of the NMT Alumni Association, 2012-2013. He also established the Earl and Bess Douglas Scholarship to honor Douglas family contributions to education in Socorro and throughout New Mexico.

In lieu of flowers, the family asks that donations be made to New Mexico Tech, either to the Class of 1960 Endowment fund or the Douglas, Earl and Bessie Family Scholarship fund. Online tributes may be made at: https://advancement.nmt.edu/page.aspx?pid=304 (*select desired fund from the Designation dropdown menu*).

Who Can Leave a Legacy?

Anyone! Legacy giving is not just for the wealthy.
Anyone who wants to make a difference beyond their lifetime can plan a legacy gift.

Why Leave a Legacy?

When choosing to leave a gift in your will, you are providing critical financial support to benefit future generations. While realizing tax savings, you can also feel good knowing your gift will have an enormous impact on New Mexico Tech today and tomorrow.

Leaving a gift in your will may be one of the most fulfilling decisions you ever make and it's easier than you might think.

Benefits of planning a legacy gift:

- You ensure that your gift is meaningful to you and has the impact you want.
- You continue to have the use of your assets during your lifetime.
- Your gift can be altered at any time should your circumstances change.

NEW MEXICO TECH
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Macs Brown, a senior in Mechanical Engineering (expected graduation May 2020), grew up in a tiny town in North Carolina. When he was in high school, visiting family friends mentioned a "small school in the desert" out west, Macs' first introduction to NMT. After researching, he was interested in EMRTC and, during a senior-year visit with his dad, drawn to the personal and individual connections between faculty, students, and staff. He notes that bigger schools he visited felt impersonal, with thousands of students and hundreds of faculty. Seeing NMT professors greet students by name, and students excited about their academic and research pursuits, sold him on NMT. (Very low student debt at graduation helped, too.)

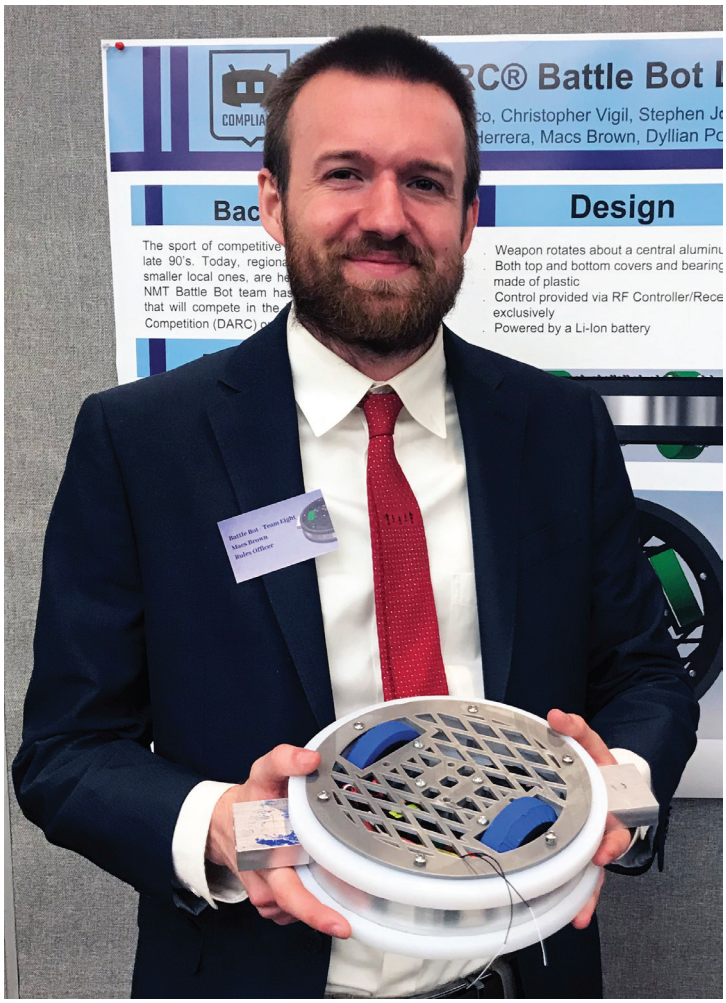
Macs' high school years were not unusual – he thought he hated math until he was a senior and decided to pursue engineering. He took college classes (earning an Associate's degree in the process) and found a math professor he liked. She taught by asking "Can you understand and apply concepts I teach you?" rather than by the high school approach, theory with no application.

As a Tech student, he has loved the setting, the focus, the opportunity to research and discover (both in the classroom and in his life). A typical Techie, Macs is busy with academics, but has made time to join the Air Rifle Club. This type of target shooting requires control, focus, and concentration, letting Macs "get his head out of engineering for an hour or two" every week. Each year a few club members travel to Ft. Benning, GA, to compete at the club level; Macs has participated for three years.

Since high school, he's been fascinated with HARP, the High Altitude Research Project from the 1960s, started at McGill University and headed up by Gerald Bull. (The program investigated the possibility of gun-fired rockets and satellites.) Macs discovered an operational HARP long gun in for maintenance at the EMRTC machine shop – a captivating find. He's been able to witness several high-speed ballistic test shots while working at EMRTC, which use guns of similar make.

In Fall 2018, during his first semester (of four) in the Mechanical Engineering Design Clinic, Macs joined the new Battle Bots project (*read more in the Student Research article in this issue, page 23*). In addition to learning about Battle Bots, brainstorming design possibilities, building, testing, and other project responsibilities, his major contribution was machining all the metal components (*see photo*). Macs plans to continue with the team for his second year, and believes the Battle Bots project is a great outreach option to share the excitement of learning and STEM with kids, whether they're three or thirteen or eighty-three years old.

His plan after NMT is to pursue graduate studies in aerospace, preferably at a school with programs in hypersonics, combustion, and ballistics. His long-term goal is to teach. He grew up in a family of teachers and loves the "aha" moments, as all natural-born teachers do. He's excited by the idea of learning for learning's sake, and passing on that passion to future students.



Macs with inaugural Battle Bot (note machining work!)

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