

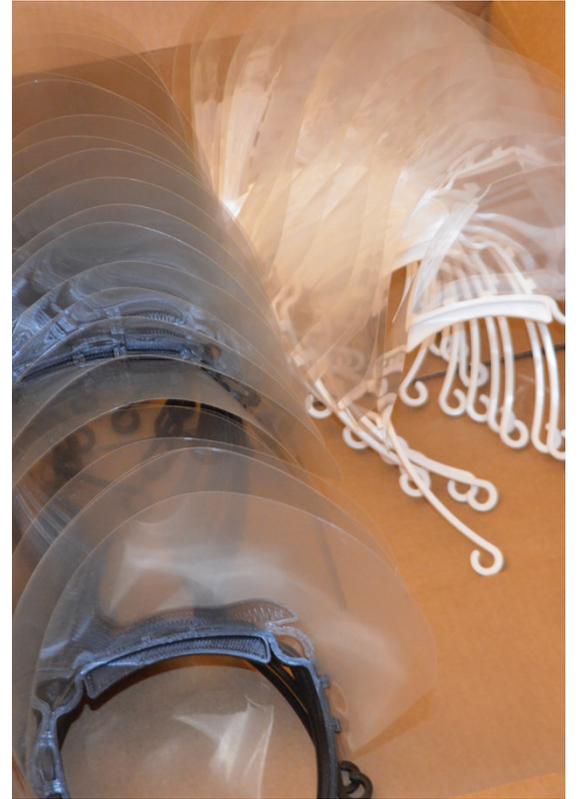


Printing face shields for the front lines

Teens use 3D printers built at Sandia to pay it forward, help medical professionals



FUTURE LEADERS — Teens work with 3D printers during a robotics camp hosted at Sandia last May. Some camp participants are now using 3D printers to make face shields for donation to medical professionals. Photo by Randy Montoya



PLAYING IT SAFE — Face shields made by local teens are ready for donation. Photo courtesy of R4 Creating

By Manette Newbold Fisher

Teens who learned to build 3D printers during a weeklong robotics camp at Sandia last year have used them to make more than 3,000 face shields that have been donated to medical professionals and first responders in New Mexico.

The camp was hosted by Sandia in collaboration with R4 Creating, a nonprofit organization that provides robotics and STEM opportunities for kids. Sandia graduate student intern John Krukar instructed the students at the camp last year and said when he found out what the teens are making now, it was a highlight during the global crisis.

“It’s easy to feel helpless and think, ‘How could I make a difference?’” he said. “To hear that

these kids took what they learned from the camp, and together, they’re making a difference in the community, it made it feel like we had gotten this awesome return on investment. It was cool to do the camp anyway and ignite their interest in 3D printing and engineering, but now they’re helping our state and our city.”

— CONTINUED ON PAGE 3

Pulling together while standing apart

Mobile Guardian Transporter team finds safe ways to conduct critical work during pandemic

By Julie Hall

There’s never a good time for a pandemic. But when you’re the team lead or a team member on a complicated, highly visible project with multiple stakeholders, working on a tight schedule toward a one-of-a-kind test, it can challenge your team’s mettle. Systems engineer Kylen Johns and her team on the Mobile Guardian Transporter Prototype 1 test vehicle have been living this challenge since mid-March.

MGT is the next generation secure transportation system, and its development is a critical element of NNSA’s nuclear deterrence modernization program. As team lead for Prototype 1 for almost three years, Kylen is currently focused on leading an approximately 25-member team to ensure the trailer is instrumented and ready for a full-scale crash test this summer at Sandia’s rocket sled track.

When Sandia’s Albuquerque campus shifted predominantly to telework in consonance with the New Mexico governor’s stay-at-home order, it added a whole new level of complexity and pressure to the MGT project.

Many of the crash preparation activities take place in and around the Prototype 1 test vehicle inside a high bay on the campus. The inherent close quarters of the work make progress difficult in the current pandemic environment. The crash test is critical to Sandia’s mission, and it is an NNSA priority. While much of the rest of Sandia started to work from home, that wasn’t an option for the Prototype 1 team.

The first couple of weeks were difficult and morale suffered, Kylen said. Team members were



GOING THE DISTANCE — Sandia quality engineer Dulce Barrera, left, and systems engineer and team lead Kylen Johns coordinated with colleagues to mitigate the challenges caused by COVID-19 during preparation for an upcoming transportation test. Photo by Bret Latter

nervous and struggled with how to implement social distancing and safely carry out their work. It was difficult getting onsite during that time, and some team members needed to work from home because they or family members were at higher risk of infection or were caring for children. About 15 people were working in the high bay on a daily basis, but the project lost ground.

Asset security and WMD response management, in conjunction with validation and qualification management, industrial hygiene and environment, safety and health personnel, developed and communicated guidance to the team to enable continuing hands-on work in a COVID-19 environment.

— CONTINUED ON PAGE 5

LABNEWS Notes

American Indian Outreach Committee delivers

Sandians donate food and supplies to Zuni Pueblo mobile pantry

Story by **Luke Frank**
Photos by **Lonnie Anderson**

Between May 2-9, more than 200 pounds of beans, 150 pounds of rice and nearly 300 rolls of toilet paper were delivered to Zuni Pueblo by Sandia’s American Indian Outreach Committee. The group also delivered canned goods, facemasks, cases of water and prayers.

The committee asked Zuni leaders what was needed most that could come from Albuquerque. Monetary donations exceeding \$1,200 were collected and shopping promptly commenced.

Items totaling nearly \$1,100 were delivered to **Zuni’s Emergency Mobile Pantry** and are being distributed to elders and pueblo members most in need while under lockdown during the COVID-19 pandemic sweeping through New Mexico’s hard-hit McKinley County. Leftover cash donations will be given to the Zuni Emergency Mobile Pantry accountant.

“AIOC is so much more than a committee, it is family,” said committee member Robert Yawakie, also a member of Zuni Pueblo. “We are comprised of many nations, pueblos and tribes, yet we share a common bond and are always giving to help our communities.”



TRUCKLOAD OF GOOD — Sandia’s American Indian Outreach Committee members loaded trucks with canned goods, nonperishable food items, water bottles and other supplies to deliver to Zuni Pueblo in early May.



MAKING A DIFFERENCE — From left, Laurence Brown, Alice Sobczak and Jhana Gearhart (Gorman) showed up to help load donations for delivery to the Zuni Emergency Mobile Pantry.



SIGNATURE DELIVERY — Sandia AIOC members signed a poster to accompany the donations they collected and delivered to Zuni Pueblo.

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Sandia collects \$250,000 for Native American neighbors

By **Luke Frank**

When COVID-19 began ravaging Native American communities in the southwest in April, a sense of urgency started to mount for Sandia tribal government relations program manager Laurence Brown.

As the virus spread rapidly in parts of the Navajo Nation and New Mexico pueblos, a groundswell of Sandia employees — including many Native Americans and members of Sandia’s American Indian Outreach Committee — started contacting Laurence and others, offering to help. The grassroots effort initiated by Sandia’s workforce sparked a Labs-wide fundraising drive, resulting in donations of more than \$225,000 from 1,766 donors in just two weeks, plus a \$25,000 match from National Technology & Engineering Solutions of Sandia LLC, the contractor that manages the Labs.

“What Sandia has done will make a big difference in providing direct support and needs in our American Indian communities,” Laurence said. “COVID-19 has put Native Americans in New Mexico in a difficult situation.”

Native Americans have accounted for more than 55% of New Mexico’s confirmed COVID-19 cases, but they make up less than 11% of the state’s population.

Native Americans are at a higher risk from COVID-19 because of geographical isolation, limited access to health care, chronic poverty, extended family households and prevalence of preexisting health conditions. Some tribal water services and meal programs have even been forced to close to protect public health, causing additional hardships for elderly, disabled and low-income residents.

Add to that strict COVID-19 curfews for those entering and leaving tribal lands, and families and whole communities are acutely vulnerable. “It’s become a real challenge accessing goods and services in rural, remote areas under rolling curfews,” Laurence said.

‘The need is now’

As Sandia colleagues and committees began organizing and asking how they could help New Mexico’s



REACHING OUT — Sandia employees and members of the Navajo Nation’s Hogback, New Mexico, dance group celebrated Native American Heritage Month in November 2017. **Photo by Randy Montoya**

tribal communities, Laurence found himself repeating, “The need is now, and the need is great.”

With a dedicated gathering of resources, the search was on for a nonprofit that focused specifically on tribal communities in New Mexico.

“Sandia’s American Indian Outreach Committee members were working diligently to locate a suitable nonprofit and identified the Native American Relief Fund as the conduit that would quickly deliver support to the 23 tribes and pueblos of New Mexico,” said Benjamin Mar, AIOC chair.

The [Native American Relief Fund](#) was established by the New Mexico Foundation in collaboration with the Santa Fe Community Foundation to provide emergency grants to tribal communities and organizations. These grants are used to donate food, water, baby food, diapers, toilet paper, hand soap, sanitizer and other essentials, as well as supporting long-term recovery efforts to some of the hardest-hit Native American families and communities impacted by COVID-19. Sandia had found its pipeline.

Campaign within a campaign

With the nonprofit in place, it was time to create a uniquely Sandia campaign. The United Way of Central New Mexico, with decades of partnership with the

Labs, was enlisted to manage the fundraising and ultimately, Laurence’s mantra — “the need is now” — became the Labs’ drumbeat to raise donations.

Sandia rolled out its effort, called the Need is Now campaign, April 22 with a Labs-wide plea to donate from Labs Director James Peery, who called it a matter of life and death to a struggling population. The workforce immediately responded, raising nearly \$25,000 by the end of the first day. Within two days, employees had donated more than \$121,000, well over the amount needed to ensure the \$25,000 matching donation from NTESS.

“The New Mexico Foundation has established a committee of leaders familiar with tribal community needs to create a fair and equitable distribution process,” said JoAnn Melchor, New Mexico Foundation president and CEO. “Our committee will meet weekly to assess additional funding needs for tribes and allocate funds based on those most in need. We’re focusing on finding the gaps in support so that we’re not duplicating efforts.”

Community Involvement manager Amy Tapia said she’s always impressed by Sandia employees’ generous support of our neighbors. “Donating more than \$100,000 dollars in the first 48 hours of this effort is astounding. I couldn’t be prouder.”

Printing face shields

CONTINUED FROM PAGE 1

Fourteen teens participated in the robotics camp last May, then taught more teens how to build 3D printers during summer and winter camps, said Shelly Gruenig, who leads R4 Creating. Now, about 20 teens are continuously [running the machines](#) to create bands that fit around the forehead and can be attached to commercial-off-the-shelf, plastic transparency sheets that cover the face.

The face shields offer non-medical-grade protection and are often worn in addition to medical-grade personal protective equipment, Gruenig said. They have been delivered at no cost to medical centers, pueblos, fire departments and EMTs.

All organizations that were offered the shields have accepted, she said. “There was such a shortage of supplies. Many of these places didn’t have enough protective equipment for their staff.”

Teen leader takes charge

The first 500 face shields were produced using resources the students already had, Gruenig said, and financial support from the community has helped them continue making more. The original idea came from 16-year-old Kent Nelson, who participated in a [robotics camp](#) last winter, where he learned to build a 3D printer from one of the teens who had attended the summer camp at Sandia.

Nelson’s family had already been brainstorming ideas of how to spend time together in quarantine, and Gruenig challenged the robotics group to think of ways to make their time at home productive. Nelson suggested they could make face shields, and he did some research on best practices for making them.

“The design we chose is a good one because it’s easy to sanitize,” he said. “It’s also quick to print.



GIVING BACK — Two teens work together after making 3D printers at Sandia last May. Some teens from the camp have since taught others how to build the printers. **Photo by Randy Montoya**

It takes about 30-45 minutes, and the materials are really easy to get.”

He said the group plans to keep printing, assembling and delivering the face shields for as long as they’re needed.

“It really has been a beautiful thing,” Gruenig said. “We’ve given people hope. People constantly tell me, ‘Oh my gosh, teenagers are doing this?’ This gives me hope for our future, with teen leaders like this.”

Ripple effect

During the camp last year, John provided 3D model files participants could use right away to print video game characters, steamboats and lizards; then he helped them design original figurines using free open-source programs. John also used a 3D depth camera to capture the teenagers so they could print action figures of themselves.



PAYING IT FORWARD — Face shields made by New Mexico teens are being donated to medical centers, pueblos, fire departments and EMTs around the state. **Photo courtesy of R4 Creating**

“When we were trying to come up with an idea of what we could teach the kids, we said, hey, let’s do a 3D printer kit,” said Sandia manager Jake Deuel, who led the camp with John. “We figured kids would make toys. Who knew that they would be used for COVID-19 response to help true first responders? When I heard about what they’re doing, it felt like pride and excitement all rolled into one emotion.”

John hopes the teens continue using their skills to teach and help others in the future. “Now there are even more kids than were at the camp who have built 3D printers. I taught them a few things, and they’re probably better than me now at all this stuff,” he said.

“They’re continuing to teach other kids and it has a ripple effect. This has probably been the highlight of the pandemic for me to hear, ‘wow, these guys are doing something. They’re really paying it forward.’”

Breaking down the memory-speed bottleneck

Sandia to receive Fujitsu 'green' supercomputer processor

By Neal Singer

This spring, Labs researchers anticipate Sandia becoming one of the first DOE laboratories to receive the newest A64FX Fujitsu processor, a Japanese Arm-based processor optimized for high performance computing.

Arm-based processors are used widely in small electronic devices like cell phones. More recently, Arm-based processors were installed in Sandia's [Astra supercomputer](#), where they are the frontline in a DOE effort to keep competitive the market of supercomputer chip providers.

"Being early adopters of this technology benefits all parties involved," said Scott Collis, director of Sandia's [Center for Computing Research](#).

Penguin Computer Inc. will deliver the new system — the first Fujitsu PRIMEHPC FX700 with A64FX processors.

"This Fujitsu-Penguin computer offers the potential to improve algorithms that may not perform well on GPU (graphics processing unit) accelerators," Scott said. "In these cases, code performance is often limited by memory speed, not the speed of computation. This system is the first that closely couples efficient and powerful Arm processors to really fast memory to help break down this memory-speed bottleneck."

"Our goal is to provide early access to upcoming technologies," said Ken Gudenrath, Penguin's director of interactions with DOE.

Sandia will evaluate Fujitsu's new processor and compiler using DOE mini- and proxy-applications and will share the results with Fujitsu and Penguin. Mini- and proxy-apps are small, manageable versions of applications used for initial testing and collaborations. They also are open source, which means they can be freely modified to fit particular problems.

"This acquisition furthers the Labs' research and development in Arm-based computing technologies and builds upon the highly successful Astra platform, the world's first petascale Arm-based supercomputer," said James Laros, who leads Vanguard, Sandia's advanced-architectures technology-prototype program tasked to explore emerging techniques in supercomputing.

Maximizing green computational power

The 48-core A64FX processor was designed for Japan's soon-to-be-deployed Fugaku supercomputer, which incorporates high-bandwidth memory. It also is the first to fully utilize wide vector lanes that were designed around Arm's Scalable Vector Extensions. These wide vector lanes make possible a type of data level parallelism where a single instruction operates on multiple data elements arranged in parallel.

"The new processor's efficiency and increased performance per watt provides researchers with significantly greater fractions of usable peak performance," said Sandia manager Robert Hoekstra. "The Japanese supercomputing team at the RIKEN Center for Computational Science has partnered with Fujitsu and focused on increasing vectorization and memory bandwidth to maximize the computational power of the system. The result is that an early A64FX-based system sits atop the Green500 list of most efficient supercomputers."

In addition to expanding Sandia's efforts to develop new suppliers by advancing Arm-based technologies for high performance computing, this acquisition also supports DOE's collaboration with the Japanese supercomputing community.

Cooperation with the RIKEN Center is part of a [Memorandum of Understanding](#) signed in 2014 between DOE and the Japanese Ministry of Education, Culture, Sports, Science and Technology. Both organizations have agreed to work together to improve high performance computing, including collaborative development of computing architectures. [i](#)

VANGUARD

EMS Environmental Excellence Awards

Zero Waste, better cooling and analytics recognized for improving Labs performance

By Stephanie Holinka

This April 22 marked the 50th anniversary of Earth Day. Though Sandians were unable to celebrate on-site, the Labs' annual Environmental Management System Environmental Excellence Awards honored those who help to reduce ecological impacts, in the spirit of resource conservation and environmental protection.

Among the winning projects is the Zero Waste team's [Zero Waste Challenge](#), which won the Grassroots award. Employees who complete the challenge earn up to 3,500 Virgin Pulse points as they learn how to implement easy steps in their daily routines to reduce their environmental impact at work and at home.

The Resource Conservation award went to engineering project lead David J. Martinez and his team for their [cooling unit installed on the roof of the supercomputer center](#) at Sandia's Albuquerque campus. Installation saved 554,000 gallons of water and 195,000 kilowatt hours of electricity during its first six months of operation.

Building systems planner Jerry Gallegos won the Kaizen award for his use of energy analytics, which continually monitors buildings for peak performance and supports Sandia's Federal Energy Reporting Requirements. In addition to energy reduction, analytics allows for automated fault detection, deviations from optimal operations and diagnostics to assist maintenance teams in optimizing building performance.

Recruitment team members Taylor Williams, Danielle Martinez, David S. Martinez, Chelsea McAdam and Timothy Brown won the Above and Beyond award. They implemented techniques to reduce the amount of material printed for recruiting events, which led to reduced print expenses and eliminated excess paper waste. They also switched to reusable mesh packing bags to reduce single-use plastic entering the environment.

The Tech Area I Landscape Master Plan received the Sequoia award. Created by planner Jennifer Reisz Westlund, intern Carlos Gomez and designer Alicia Bustillos, the master plan lays out useful green infrastructure that will advance campus amenities in a pleasant yet sustainable way. The design



SAVING RESOURCES — The Resource Conservation award went to engineering project lead David J. Martinez and his team for installation of a supercomputer center cooling unit that saved 554,000 gallons of water and 195,000 kilowatt hours of electricity during its first six months of operation. **Photo by Randy Montoya**



GREEN PLANNING — The Tech Area I Landscape Master Plan won the Sequoia award. **Images by Alicia Bustillos**

includes plants for pollinators.

Selina Santiago won the Greenie award for her creation of a recycling program for Building 827 on Sandia's Albuquerque campus. The building is designed to become the first zero-waste building on campus. When Selina started the project in fiscal year 2017, waste disposal was at roughly 1.8 pounds per person per week. Sampling in February 2020 showed that waste has been reduced to 1.06 pounds per person per week.

"These EMS awards are the first step in identifying projects for the NNSA Environmental Stewardship awards, which recognize exemplary contribution to environmental stewardship across the DOE complex," said Sandia environment, safety and health director Johnathon Huff.

Employees can visit Sandia's internal [EMS Environmental Excellence Awards](#) website for more information, including descriptions of the winning projects. [i](#)

Sandia copes with COVID-19

A day in the life at 70 + 1

Story and photos by **Randy Montoya**

Last year, we celebrated **Sandia's 70th birthday** with pride, honoring the Labs' response to seven decades of challenges. At the time, we had no idea of the dramatic world events that would be in store for us in year 71.

Throughout major world events like the Cuban Missile Crisis, the 9-11 attacks and the current COVID-19 pandemic, Sandians have continued to serve the nation, completing their mission-essential work wherever they need to be, from remote parts of the world to dusty test sites and isolated laboratories to the kitchen table at home.

This abridged photo essay provides a peek into Sandia's response to this new threat: keeping each other safe as we move forward together and continue our mission. [f](#)



PASSING INSPECTION — Rip Winckel, left, and Kevin Good used social distancing and protective masks to keep themselves safe while conducting a heliostat field safety inspection.



TESTING, TESTING — From left, Alfonso Ponce, Luis Abeyta and John Bauer wear masks and stay at least six feet apart while discussing test plans for the 200-foot drop tower.



SECURE TRANSPORT — Ray Ortiz wears personal protective equipment while unloading boxes for delivery.



WELL EQUIPPED — Physician's assistant Karen Conner adjusts her medical mask, part of her personal protective equipment, as she prepares to see a patient at the Sandia Medical Clinic.

Pulling together

CONTINUED FROM PAGE 1

Finding a new normal

Kylen gathered the team, and together they worked to implement that guidance, with updates to processes and procedures to keep everyone safe and still get the work done. The virus-influenced environment required an ample supply of gloves, hand sanitizer and cleaning supplies, and it meant wearing face coverings, setting a two-person limit in the trailer, spreading out the work in the high bay as much as possible and wiping down surfaces multiple times a day.

Multiple team members generated and implemented ideas, including quality engineer Dulce Barrera, who also personally sewed dozens of masks for those working in the area.

"We created our own new normal and took it upon ourselves to not only protect ourselves but our coworkers," Kylen said. "Once we had a process flow and PPE (personal protective equipment),

the stress just fell off and everyone at that point felt a lot more comfortable."

Kylen switched the daily stand-up meeting from an in-person meeting in the high bay to a Skype meeting, which allowed the entire crash team to participate, including team members working from home.

Moving forward

Kylen said that once the team figured out a pace and preferred communication styles, everything moved forward. The team was able to make up for some lost time and actually accelerate the remaining schedule. Cargo loading was completed on schedule, and the team is currently on track to deliver the test vehicle to Sandia's Tech Area 3. Validation and qualification personnel are also on track with associated test preparation activities in the area.

"Kylen, her team, and our partners who are executing the test are laser-focused on a successful test this summer," said Daniel Wilcox, MGT technical basis manager. "Their dedication is evident in the

day-to-day interactions and progress. Kylen's positive attitude and proactive leadership have been key to the team's success during the pandemic.

"This project was already a challenge due to its scope and complexity; add on the challenge of COVID-19, and the progress that Kylen and her team are making is truly extraordinary."

The team continues to do things to keep up morale. Kylen has brought in food on occasion for the team, and the quality team members have established Wednesdays as "snack days," bringing in individually wrapped snacks. Safety continues to be paramount, and if things get moving too fast, Kylen stresses the importance of taking a moment to pause and take a breath.

"It started as something very negative and stressful, and it turned into something where we've actually had better teaming than we've probably had in years," she said. "The big thing for me is I'm just grateful to the team because I think it takes active dedication. Every single one of them has chosen to come in each day, be positive and push through." [f](#)

Sew many masks

Volunteers make masks and accessories for essential workers, community members

By **Stephanie Holinka**

In between Skype meetings and other daily work, many employees at Sandia's Albuquerque campus are helping the community with homemade masks at a time when personal protective equipment is in short supply and reserved primarily for medical staff. Some of the many volunteers have shared a little about who they are making masks for and what made them decide to step up and help.

Technical writer Laura Sowko sews masks for the Albuquerque Veterans Affairs Medical Center.

"I decided to do this because I know that PPE may be difficult to come by and so many people need masks. It not only feels good to contribute masks, but each is also an act of love and hope," Laura said. "Plus, I enjoy sewing; it's a nice way to spend time rather than worrying about things I cannot change."

Business manager Lilia Garcia is helping some local quilting stores provide masks to support New Mexico Governor Michelle Lujan Grisham's request for masks for first responders like police, fire and medical personnel.

"I have underlying conditions with a lowered immune system. I cannot go out to get groceries, etc., and my friends and family have been amazing, calling me when they are in the store and getting me what I need," she said. "Making masks for family and friends and first responders is all I can do for those who do so much for me. These are hard times for everyone. We need to help each

other to get through it. This is all I can do to help at the moment."

Technologist Rose Torres makes masks for doctors and nurses who need fabric masks.

"It's important to help out where you can. I love to sew and there is a need for masks, so I started sewing. I want to make as many as I can and donate them so medical personnel can get the masks that they need, for free," Rose said.

Systems engineer Lisa Miller sews masks for the Albuquerque Children Youth and Family Department. The CYFD is distributing masks to the Navajo Nation and other organizations. Lisa has made about 150 masks and said CYFD has collected more than 3,000 masks from businesses and other volunteer mask makers.

"I think it's important for all of us to pull together to help each other, especially right now," Lisa said.

Information technology specialist Janell Marker said her community is sewing masks for healthcare workers in various parts of the country. She volunteered to write notes to the healthcare workers who receive the masks, thanking them for what they are doing right now. Janell's community has sent masks and thank you notes to several hospitals, and they plan to continue making and sending more.

"I feel so fortunate to be able to work from the safety and comfort of my home while these brave folks are on the front lines, fighting this COVID-19 enemy. They are the true heroes and heroines of our day," she said.



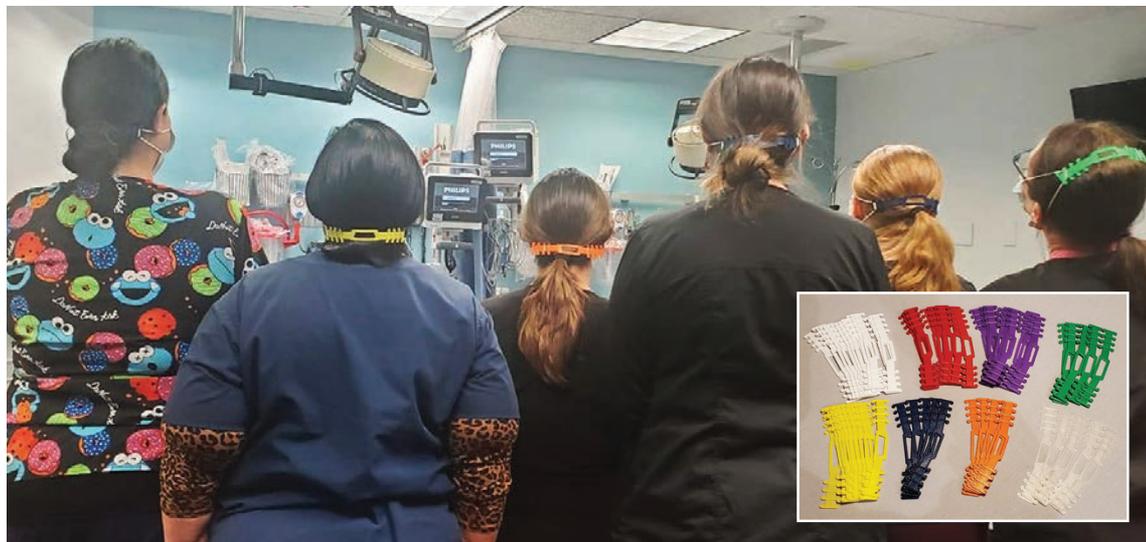
MEETING A NEED — Sandia compensation specialist Denise D. Padilla, who started making masks for family and friends, saw demand grow when her daughter and a friend posted a thank you on Facebook. Denise estimates that she has made more than 350 masks for organizations and people in the community to date. **Photo by Denise D. Padilla**

Compensation specialist Denise D. Padilla is making masks for Casa Angelica, the Bernalillo County Sheriff's Department, University of New Mexico Hospital and Presbyterian Hospital, as well as a few banks and credit unions.

"My daughter's friend, an RN (registered nurse) at Presbyterian Hospital, saw a pattern for mask-making, forwarded it to me, and asked if I could make some masks for them," Denise said. "My daughter and her friend posted a thank you on Facebook, and I started getting many requests from there. Strangers were contacting me, asking me if I could make them masks. I have lost count, but I think I have donated over 350 masks."

Information assurance specialist Jeremy Steen is 3D printing face-mask clips, which make wearing a mask more comfortable. Jeremy has family members in the medical field and working as essential personnel, and he has a high-risk spouse. He has provided the clips to many organizations, including UNM and Lovelace hospitals, Comfort Dental, the U.S. Army Air Force Base Exchange on Kirtland Air Force Base and local Walmart and Dion's Pizza locations. He also has donated masks to individuals, including grocery delivery workers, local families and nurses in Florida and Indiana.

"We help because it is the right thing to do. It takes a community to take care of a community. Not everyone is able to stay home and stay safe," Jeremy said. 



COMMUNITY SUPPORT — Sandia information assurance specialist Jeremy Steen is 3D printing face-mask clips, which make wearing a mask more comfortable. He has donated clips to many organizations and people in Albuquerque, as well as Florida and Indiana. **Photos by Jeremy Steen**

Ken Gillen earns lifetime achievement award

By **Whitney Lacy**

Sandia chemist Ken Gillen (retired) recently received the prestigious **2020 Melvin Mooney Distinguished Technology Award**, in part for his contributions to Sandia's polymer aging project. The award — presented annually by the Rubber Division of the American Chemical Society — honors recipients for their "exceptional technical competence by making significant and repeated contributions to rubber technology." In the 38-year history of the award, Ken is the first awardee from a U.S. national laboratory.

"It's truly a great honor," said Ken by email from his home in Albuquerque. "I retired from Sandia in 2004, but I've kept writing and giving talks in this field because I think it's so important to know the effects of polymer degradation."

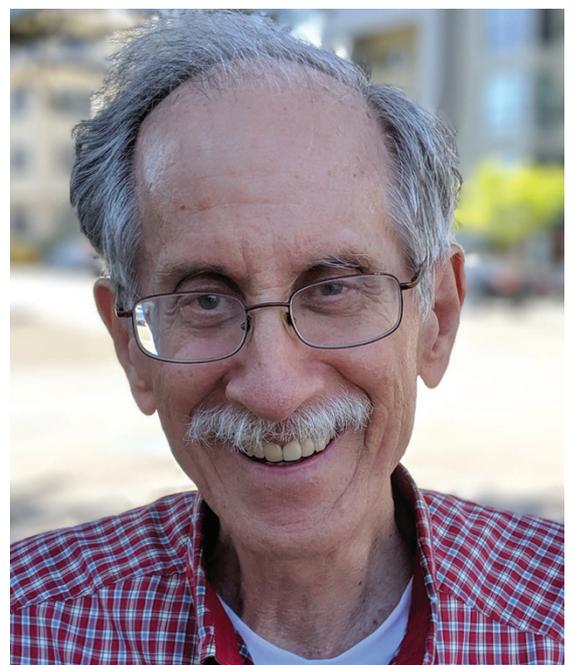
Ken began his career at Sandia in 1974, and for 30 years he worked tirelessly to determine the effects that temperature, radiation, humidity and mechanical stress have on components made of rubber.

These studies have numerous implications, as rubber is used in everyday household items like

dishwashing gloves, children's toys and flooring; in mechanical and laboratory equipment such as surgical tubing used in hospitals; in industrial components such as seals in nuclear weapons and satellites; and in nuclear power plant safety equipment such as electrical cables.

One of Ken's bigger contributions to the field was the study of aging effects on the rubber used in car tires. In 1987, Ken and his colleagues created the modulus profiler — an apparatus capable of mapping modulus measurements across a material's cross-section, with a resolution of about 50 micrometers. This led to understanding the importance of diffusion-limited oxidation during aging and enabled more reliable lifetime predictions of polymer degradation. Sandia's years-long efforts in these studies led to industrial research collaborations in the tire industry, and as a result, most Americans own cars with better, longer-lasting tires.

Ken says he is forever grateful for Sandia and credits the success of this research to all of his incredibly talented co-workers on Sandia's polymer aging program, which continues today in the Labs' organic materials science group. 



MODULUS PROFILER — Sandia chemist Ken Gillen (retired) recently was honored with the 2020 Melvin Mooney Distinguished Technology Award by the Rubber Division of the American Chemical Society.

Photo courtesy of Ken Gillen

Mileposts



*New Mexico photos by Michelle Fleming
California photos by Randy Wong*



Perry D'Antonio 40



John Espinoza 40



Mark Greenslete 40



Larry Miller 40



Dan Barton 35



Mark Stavig 35



Diane Callow 30



Brian Geery 30



Mike Hagenruber 30



Marc Kniskern 30



John Mounho 30



Bev Ortiz 30



Vincent Tidwell 30



Ben Aragon 25



Shawn Burns 25



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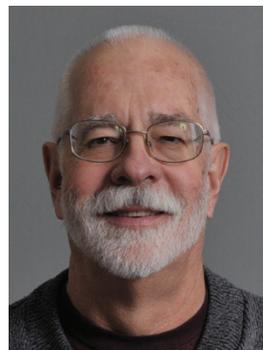
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Protecting those who protect the community

Sandia engineer helps lead effort to make face shields, collect and distribute PPE

By Paul Rhien

When Sandia/California mechanical engineer Helena Jin saw news of doctors and nurses having to fight COVID-19 without adequate protection, she described feeling shocked and saddened. Extreme shortages of personal protective equipment have posed large challenges to the U.S. healthcare system during the response to the COVID-19 pandemic.

“I knew that I had to do something and had to do it quickly,” Helena said.

While talking with other members of the Tri-Valley Chinese American Community volunteer group, she learned that many had similar concerns and were anxious to help meet this critical need.

The group quickly launched an initiative to provide local hospitals and essential businesses with donated masks, gloves, hand sanitizers, disinfectants and other essential products.

“We knew how devastating and frightening it must be to fight the virus without proper protection,” Helena said.

Building synergy

In March, the volunteer group began collecting financial and in-kind donations, adopting the slogan “Alone we can do so little. Together, we can do so much!” Using their connections, many donors contacted family and friends overseas and had them ship PPE directly from China. Others gave generously of their time and resources.

Together, the group has secured and distributed more than 43,000 items of PPE to hospitals and clinics, nursing homes, senior centers, post offices, fire stations, food kitchens and other essential businesses in California communities from Livermore and Modesto to Oakland and Santa Clara.

“I am moved by the trust and good deeds from our community,” Helena said. “These small acts of kindness, when multiplied by hundreds of people, have gone a long way in helping protect our communities.”

Applied engineering

Beyond collecting PPE donations, Helena also is using her engineering skills and experience from

Sandia to lead a group of area middle and high school students to hand-make or 3D print reusable and environmentally friendly face shields. She has improved the design and functionality to make the frames more durable, easy to use and 3D-printer friendly.

“It is a great feeling to be able to transfer the knowledge that I accumulated at Sandia to the outside world,” she said.

Helena said students, parents and teachers have been thrilled that 3D-printing technology is not only a concept they have learned in the classroom, but a practical tool they can use to serve the community.

“It has been wonderful to see our next generations stepping up to the challenge, applying the advanced 3D-printing technology as a tool to fight the pandemic,” she said. “No one knows how and when this pandemic will exactly end. But we know that our students, families and communities are bringing their best selves to fight COVID-19.”



PPE DELIVERY — From left, Wei Liu and Gina Li join Sandia engineer Helena Jin to deliver personal protective equipment donated by the Tri-Valley Chinese American Community volunteer group to help address the shortage of supplies available to healthcare workers in the area. **Photos courtesy of Helena Jin**



FAMILY MATTER — Sandia engineer Helena Jin, center, gets a helping hand from her children, Kacie, left, and Jason, assembling face shields for donation to northern California healthcare workers. Helena is leading a group of students to hand-make or 3D print reusable and environmentally friendly face shields.