

NMAS Newsletter

Recognition for NMAS Junior Scientists and Member

Vol 100 No. 1 Spring/Summer 2014

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ANNOUNCEMENTS

- Save the date: November 1. Our annual meeting will once again be held with NM EPSCoR. Details about the program and a list of events will be in the next newsletter. Check the website too for more details and up-to-date information about this event as it becomes available.
- See our new website, where you can find all the information about what we do, and how you can help and participate.



Also, you will soon be able to pay membership your dues online. We'll keep you updated, so please visit <http://nmas.org/>.

• Newsletter changes: In the future we are going to be sending all newsletters electronically as a .pdf file. If you would still like to continue to receive the newsletter in hardcopy, please contact the NMAS. If we do not have your email address, or if you would like to provide a new email address, please do so soon. Send all queries to nmas@nmas.org.

• It's time to pay your membership dues for 2014.

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New Mexico Academy of Science

Founded in 1902 to foster scientific research and scientific cooperation, increase public awareness of the role of science in human progress and human welfare, and promote science education in New Mexico. NMAS has been in continuous existence since 1915, and became formally associated with the New Mexico Museum of Natural History and Science in 1995.

Affiliated with the American Association for the Advancement of Science (AAAS)

Member of the National Association of the Academies of Science (NAAS)

NMAS MEMBER NEWS

NMAS welcomes returning members, officers, and board members, as well as new ones: Shanalyn Kemme (Vice President), Vincent Gutschick (Treasurer), Anton Sumali (Outreach), and John Irwin (Teacher Awards).

Our thanks to those who have made donations to the NMAS this year

Why not plan ahead today to make the NMAS a part of your legacy!

You can contribute at nmas.org

FROM THE NMAS TIME CAPSULE . . .

NMAS Past Presidents (1937-1959) Partial list, to be continued . . .

1959 Walter McGuire
1958 Joe P. Burger
1957 B.K. Graham
1956 John Harty
1955 Sarah Louise Cook
1954 Lora M. Shields
1953 Ora Clark
1952 Mary Orr
1951 Earl Miller
1950 C. Clayton Hoff
1949 Leona Thomas
1948 E.F. Castetter
1947 Gladys Nisbet
1946 A.L. Hershey
1945 John D. Clark
1944 Stuart Northrop
1943 John D. Clark
1942 John D. Clark
1941 C.E. Needham
1940 F.W. Emerson
1939 Jesse F. Bingaman
1938 O.B. Muench
1937 George Carothers

NMAS Newsletter

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PRESIDENT'S MESSAGE - JUNE 2014

Dr. Michaela Buenemann

The New Mexico Academy of Science has been fostering science and science education in New Mexico for more than fifty years and is currently in an exciting phase of transition. In this brief message, I would like to update you on what the NMAA has been up to more recently as well as on some of the things we hope to accomplish in the near future. We currently have five major programs:

1. The **New Mexico Junior Academy of Science (NMJAS)** promotes student research, participation in science fairs, and an annual written and oral technical paper competition. As you can read in this newsletter, students from across the state won places in this year's competition, which is generously supported with funds from both Sandia National Laboratories and the NMAA. The NMJAS has been extremely successful over the years due largely to the leadership of Lynn Brandvold, a retired Senior Chemist from the New Mexico Bureau of Geology & Mineral Resources.

2. Each year, the NMAA sponsors two graduating New Mexico high school seniors to attend the prestigious three week long **National Youth Science Camp (NYSC)** in West Virginia. This year's camp will be held from late June through the middle of July. Stay tuned for the reports from our two winners in the next newsletter. The NYSC program has been in the capable hands of Richard Nygren, Manager of the Fusion Department at Sandia National Laboratories, for numerous years.

3. Another important program of the NMAA has been its **Outstanding Science Teacher Awards** program, which recognizes science teachers that have gone above and beyond the call in teaching science to their students. The program was chaired for many years by Harry Pomeroy and was taken over this year by one of our two 2013 Outstanding Science Teachers, John Irwin from Texaco High School.

4. The NMAA has published more than sixty issues of the **New Mexico Journal of Science**. Some of the issues were compilations of papers on a variety of topics concerning science in New Mexico; others were issues on special topics such as dinosaurs, astronomy, energy, water resources, or climate change in New Mexico. The dedicated editor of the most recent issues has been Kurt Anderson, a retired Astronomy Professor from New Mexico State University (NMSU), current Past President of the NMAA, and long-standing member of NMAA.

5. The NMAA **Distinguished Speakers Program** brings top scientists to places across New Mexico to educate and engage communities in science issues of relevance to the state. The program is chaired by Marvin Moss, a retired physicist from Sandia National Laboratories.

We have been making a number of positive changes to how we conduct business. Last year, significant effort went into modernizing our bylaws, which now allow us to vote electronically. For the first time that year, we also co-hosted our annual meeting with NM EPSCoR. The meeting was a huge success, with about 125 people in attendance and more than fifty paper and poster presentations. We are working to make this year's meeting an even bigger and better event. We also elected to obtain 501(h) status with the IRS so that we could comment on STEM education legislation without risk to our status as a nonprofit 501(c)(3) public charity.

Goals for this year include adding more content to our new website, which we launched just a few months ago; allowing members to join the NMAA or renew their membership completely online; posting materials more regularly on our recently started Facebook page; and making the NMAA more of a go-to place for information about science and science education in New Mexico. Your help in achieving these goals would be much appreciated. Send us your news so that we can share them with other NMAA members and friends. Offer to volunteer for the NMAA (we are still looking for someone who would like to chair our newly formed Community Relations Committee).

Send us your comments and suggestions so that we can serve you better. In the meantime, enjoy this newsletter!

David Hsi, NMAS Director Emeritus, Receives Lifetime Achievement Award

On April 23, 2014, Dr. David Hsi, a longtime NMAS member, past president, treasurer, and now Director Emeritus, received the 2014 Lifetime Achievement Award from the University of Minnesota's College of Food, Agricultural and Natural Resource Sciences Alumni Society (CFANS). He received several inspiring nominations from his peers that are a testament to his influence in many people's lives throughout his career. This award

recognizes an alumna or alumnus for contributions to the College over the course of the recipient's lifetime. This individual has made outstanding contributions to the areas of food, agriculture, and natural resources and is recognized by his or her peers as a leader in the community and beyond.

David graduated from the University of Minnesota in 1951 with a doctorate in plant pathology and plant breeding. He excelled in his research on crop improvement, beginning with cotton, peanuts, sorghum and sweet potatoes with New Mexico State University. He was then, and continues to be, a respected sorghum scientist who released cultivars with high levels of resistance to charcoal rot.

Following his retirement in 1992, he went on a mission to improve the lives of fellow citizens in Albuquerque and throughout New Mexico. During his exceptional career, Dr. Hsi was invited by the US-AID to develop a comprehensive improvement plan for peanut culture in Western Pakistan. He also served as President of the New Mexico Academy of Science and later as President of the National Association of Academies of Sciences. However, Dr. Hsi was much more than a crop scientist and leader in agricultural research. His educational, community and social development activities help define this extraordinary man. Before retiring from New Mexico State University, Dr. Hsi was the first Asian American elected by the public to serve as a member of Albuquerque Board of Education. He co-chaired New Mexico Advocates for Children and Families, and

was a founding member of the Board of Directors and Vice President of the Explora Science Center and Children Museum in Albuquerque, which was national recognized in 2010 with a National Museum and Library Service Award.

Dr. Hsi received his recognition at the Colleges Boreal Night of Excellence on April 23 at the university's St. Paul campus. Founded in 1959, the College of Food, Agricultural, and Natural Resource Sciences Alumni Society has more than 3,400 members. More information is available at <http://www.cfans.umn.edu/AlumniFriends>.

NMAS is very proud to have David Hsi as one of its members. Here are a few other highlights from his distinguished career:

- In 1981, he was invited by the South African government to conduct a survey of serious groundnut (peanut) disease problem and to recommend control measures.
- In 1985, he was invited by the Chinese government to give lectures and conduct academic exchanges with senior scientists and graduate students throughout China.
- He has been an Ordained Elder of the U.S. Presbyterian Church since 1980 and reelected as an active Elder of Class 2016 at the First Presbyterian Church in Albuquerque, NM.



At the April 23 award ceremony. From left to right: Dr. Richard Frederiksen, MN State Representative Rod Hamilton (Outstanding Friend Award), CFANS Dean Brian Buhr, and David Hsi.

2014 NM Junior Academy of Science Paper Competition Winners

Lynn Brandvold, NMJAS Program Director

The NMJAS was founded in 1957. The Junior Academy promotes student research by sponsoring scientific paper and presentation competition in conjunction with all of the regional and state NM Science and Engineering Fairs. The regional 1st and 2nd place winners compete at the State Science and Engineering Fair, where 1st, 2nd, 3rd place (and sometimes honorable mention) awards are given in the Senior and Junior Divisions. The State 1st place winner in the Senior Division represents New Mexico at the national competition held annually at the National Academies of Science meeting.

Senior Division

First Place

Jeongmin Lee

Gas Phase Ion Chemistry and Ion Mobility of
Pharmaceutical Substances in Counterfeit
Formulations

Las Cruces High School, Las Cruces

Second Place

Josh Ludwigsen

Football Facemask with Impact Shock Mitigation
Eldorado High School, Albuquerque

Third Place

Lilly Chiou

Characterization of Carrots in Making
Fruit/Vegetable Juices: Will Carrots Destroy
Ascorbic Acid?

Carlsbad High School, Carlsbad

Junior Division

First Place

Rusty Ludwigsen

Passive Reduction of Involuntary Arm/Hand
Tremors

Desert Willow Family School, Albuquerque

Second Place

Ruby Salvage

All Cracked Up: Lip Balm Addiction
Los Alamos Middle School, Los Alamos

Third Place

Hannah Linder

Yuck! Brown Apples

Roosevelt Middle School, Tijeras

Honorable Mention

Devon Padilla

Wheat, the Good, the Bad and the Ugly
Grants Middle School, Grants

Honorable Mention

Logan Byrom

Hoverbility

Hermosa Middle School, Farmington

2014 Rio Grande Chapter AVS Science & Technology Society Winners

The AVS Science & Technology Society, formerly the New Mexico Chapter of the American Vacuum Society, sends judges and selects its own winners in the paper competition and awards cash prizes to these winners as well as to their teachers/sponsors. The New Mexico Academy of Science is very grateful for their support.

Senior Division

First Place

Jeongmin Lee

Las Cruces High School, Las Cruces

Second Place

Josh Ludwigsen

Eldorado High, Albuquerque

Junior Division

First Place

Logan Byrom

Hermosa Middle School, Farmington

Second Place

Devin Padilla

Grants Middle School, Grants

Senior Division
First Place Winner
Jeongmin Lee
Las Cruces High School

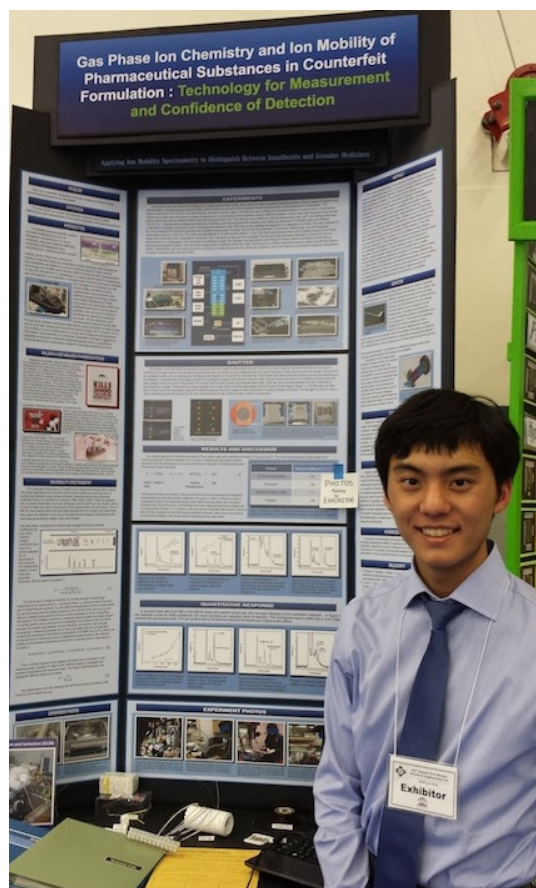
ABSTRACT: The health and well-being of populations in certain critical regions of the world are threatened today by the presence of counterfeit pharmaceuticals which are often authentic materials diluted to clinically ineffective levels and sold as authentic medicine. Those paying for the medicine are defrauded with little hope of recovery. Relatively inexpensive, portable, and reliable methods are needed to examine pills or formulations for chemical composition within vulnerable communities to eliminate or suppress the counterfeit pharmaceutical trade. Measurements and technology based on ion mobility spectrometry (IMS), already proven in military and security venues, may enable fast, on-site inspections although neither gas phase ion chemistry of anti-malarial compounds nor this mobility behavior has been described. In this investigation, gas phase ion chemistry of key anti-malarial medicines was favored over that of inert materials in pills. A laser ionization based method combined with an ion mobility spectrometer showed limits of detection of 2.5 nanograms or better in a false matrix. Methods may favor rapid field screening based on electrospray ionization of counterfeit pharmaceuticals, even in remote locations of the world. The relationship between the concentration of the sample and the intensity of mobility spectra was determined. Findings here may also impact broader issue of national security of pharmaceuticals with misrepresented manufacture or composition.

EDUCATION POLICY NEWS

Earlier in 2014, the NMAS sent a letter to the New Mexico Secretary of Education Hanna Skandera in support for the Next Generation Science Standards. What follows is a copy of that letter.

Dear Secretary Skandera,

The New Mexico Academy of Science (NMAS) recommends adoption and implementation of the Next Generation Science Standards (NGSS) by the New Mexico Public Education Department. Support for this initiative was expressed in a unani-



Jeongmin Lee. Congratulations!

mous vote of the Board of Directors at the January 11, 2014 quarterly meeting. It follows that of the National Academies and represents our unending interest in improving science education throughout the state of New Mexico.

Founded in 1902, the NMAS has been in continuous existence since 1915. The NMAS is a member of the National Association of Academies of Science (NAAS) and an affiliate of the American Association for the Advancement of Science (AAAS). The purposes of the NMAS are to promote science and science education within the State of New Mexico; improve communication among scientists, science educators, and the New Mexico general public and its governmental representatives; recognize scientists, science educators, and science students; encourage scientific research; and increase public awareness of the role of science in human progress and human welfare throughout New Mexico.

The New Mexico Academy of Science supports the adoption and implementation of the Next Generation Science Standards because this will:

Membership Form

NEW MEXICO ACADEMY OF SCIENCE

New Membership 2014 [] Renewal 2014 [] Publications [] Donation []
(check all that apply)

Date _____ Title _____ Name _____

Employer/Firm/Affiliation _____

Primary Interest (geology, astronomy, environment, education, etc.) _____

Mailing Address _____

Phone _____ FAX _____ email _____

Check if your address is different from that on the mailing label of this newsletter []

NMAS Publications

New Mexico Journal of Science	\$10 _____
Set of all available pre-1992 back issues	
From Sundaggers to Space Exploration	\$4 _____
NMAS Sigma Xi, 1986	
Dinosaurs of New Mexico	\$10 _____
NMAS Journal vol. 32, 1994	
The Importance of Agricultural Science in New Mexico's Economy	\$10 _____
NMAS Journal vol. 34, 1994	
Astronomy in New Mexico: Past, Present and Future	\$10 _____
NMAS Journal vol. 35, 1995	
New Mexico's Natural Heritage: Biological Diversity in the Land of Enchantment	\$10 _____
NMAS Journal vol. 36, 1996	
Environmental Management: Current and Future Needs	\$10 _____
NMAS Journal vol. 37, 1997	
Water Resource Issues in New Mexico	\$10 _____
NMAS Journal vol. 38, 1998	
Ensuring Sustainable Development of Arid Lands Through Time	\$10 _____
NMAS Journal vol. 39, 1999	
NMAS Journal vol. 40, 2000	\$10 _____
NMAS Journal vol. 41, 2001	\$10 _____
NMAS Journal vol. 42, 2002 (<i>Centennial CD</i>)	\$10 _____
NMAS Journal vol. 43, 2003	\$10 _____
Science on the Border (vol. 44, 2006)	\$10 _____
Energy in the Southwest (vol. 45, 2008)	\$10 _____
New Mexico's Water Resources (vol. 46, 2012)	\$10 _____

Subtotal: \$ _____

+ Handling: \$ 2.00

TOTAL: \$ _____

Membership Class (check one)

[] Member	\$25/year
[] Student	\$15/year
[] Life	\$400
<i>(3/4 of amount goes to NMAS Endowment)</i>	
[] Subscription	\$30/year
<i>(Libraries only)</i>	
[] Contribution to NMAS Endowment	\$ _____
[] Contribution to NMAS General Fund	\$ _____

Membership subtotal: \$ _____

Donation subtotal: \$ _____

Publication subtotal: \$ _____

Total: \$ _____

Membership includes newsletters and occasional special Journal of Science volumes (sent to life members and members who have paid their annual dues during the volume's year of publication).

Send checks, payable to NMAS, to:

New Mexico Academy of Science
 1801 Mountain Rd. NW
 Albuquerque, NM 87104

1. Increase the scientific literacy of all students in New Mexico schools in all core science disciplines;
2. Positively impact the readiness of New Mexico students to enter college or a career in the workforce as scientists, engineers, or technicians;
3. Prepare students to apply critical thinking skills to problems facing them as citizens who will manage the resources and businesses of New Mexico;
4. Prescribe appropriate material for study in the science classroom which is based on current research and pedagogical strategies;
5. Address New Mexico's consistently low national ranking in science education, both in general scientific literacy (8th graders ranked 44th in the nation according to the 2011 National Assessment of Educational Progress) and in specific scientific career preparation (high school students ranked 46th in the nation according to the Science and Engineering Readiness In-

dex); and

6. Positively impact the finances of New Mexico's education budget as we build on the existing national science efforts to improve education.

The NMAAS recommends solicitation of appropriate funding from the New Mexico Legislature and solicitation of support from the Governor so that ample state funding is allotted for new materials required for NGSS implementation and for professional development of teachers and administrators who will be using NGSS in their schools. It will take a concerted effort to provide time for teachers and administrators to learn, assimilate, practice, and reflect as they mesh the NGSS standards with the Common Core State Standards currently used in New Mexico classrooms.

We thank you for considering our position and encourage you to recommend the adoption and implementation of the Next Generation Science Standards for all students in New Mexico schools.



New Mexico
Academy
of Science

Newsletter

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