

The Graduation Edition



Congratulations Graduates!

On May 16, 2015, the Virginia Tech Department of Geosciences held its annual graduation ceremony, highlighting the achievements and successes of this year's graduating class.

The commencement ceremony included speeches, well-wishes and farewells by Nancy Ross (Department Head), Seth Stein (commencement speaker), Shane



Bob Lowell presents Aida Farough her PhD.

Wescott (undergraduate student representative), and Kyle Ashley (graduate student representative). Stein offered a heartfelt and humorous commencement speech, welcoming the graduates to the geosciences community. His inspirational talk reminded students how much they've learned on their paths so far, while also emphasizing how much more learning they have ahead of them.

The ceremony ended with the procession of students receiving their degrees. The department is honored to have awarded degrees to 25 bachelors students, 4 masters students and 6 doctoral students (each recognized on page 2).

We are so proud of each of you, and we wish you the best of luck for all of your future endeavors!

What's Inside

<u>Congratulation Graduates!</u>	1
<u>Thank you Connie Lowe</u>	1
<u>The Graduates</u>	2
<u>The Commencement Speaker</u>	3
<u>Geosciences News</u>	3
<u>Awards & Grants</u>	4
<u>Publications & Conferences</u>	4

Thank you Connie Lowe!

Connie Lowe is known far and wide among geosciences students and alumni. For many years, she has been the rock that all students can turn to for support during any stage of their geosciences education. What students and alumni may not realize is that she's also been the force behind every successful graduation ceremony for the last two decades.

This year marked Lowe's 20th graduation ceremony, and it was just as successful as ever. To Lowe, the students, faculty and alumni all say, "Thank you!"

The Graduates

Bachelors

Hanna Leigh Brooks: Geology & Geophysics ***
Endowed Scholarship
Sigma Gamma Epsilon W. A. Tarr Award

Corey Alexander Caulfield: Geophysics

Sara Kathleen Cauthen: Geology & Economics ...

Chelsea Nicole Delsack: Geochemistry

Grant Thomas Euen: Geophysics *** ..

Kaitlyn Victoria Fitzgerald: Geology & Classical Studies

Nicholas Cole Gammon: Geochemistry

Grant Stuart Hoover: Earth Science Education & History

Joshua Robert Jones: Geophysics

Leo Alfred Kasmer: Geology

Gregory Lester King: Geophysics *

Owen Thomas Lohner: Geology

Telemachos Andrew Manos: Geology ***
Outstanding Senior Award

Blake Alexander Morgan: Geophysics

Ryan Joseph Ordnung: Geology

Ashleigh Nicole Price: Earth Science Education

Zachary Millard Printz: Geophysics **
Endowed Scholarship

Nicholas James Wallace Purnell: Geophysics

Brittany Marie Robertson: Geology

Griffin Thomas Shaw: Geophysics

John Dudley Smith II: Geophysics **

Emma Teresa Teeter Tulskey: Geology

Johanna Mildred Vaughn: Geology

Shane Thomas Wescott: Geology *

Eric David Wollmann: Geology

* Cum Laude .. Phi Beta Kappa
 ** Magna Cum Laude ... Sigma Gamma Epsilon Member
 *** Summa Cum Laude Commonwealth Scholar

Masters

Kerry Elizabeth Campbell: “Conducting heat tracers through fractures”

Hannah Elizabeth King: “Effect of Solution Chemistry on Schwertmannite Formation”

Zachary Aaron Kiracofe: “Assessing the geologic sources of manganese in the Roanoke River watershed”
Graduate Dean’s Diversity

Kannikha Parameswari Kloandaivelu: “Numerical modeling of the hydrothermal system at the East Pacific Rise 90°50’N including anhydrite precipitation”
Endowed Scholarship

Doctorate

Kyle Thomas Ashley: “Constraining metamorphic and tectonic evolution in convergent terranes: How trace elements and mineral inclusions shape mechanical and re-constructive models” ...
College of Science Outstanding Doctoral Student
ICTAS Fellowship

Wei Cheng: “The MEso-SCALE Particle Transport model for studying sediment dynamics during storms and tsunamis”

Aida Farough: “An experimental study on characterization of ultramafic rocks and controls on evolution of fracture permeability during serpentinization at hydrothermal conditions” ...

Anthony Joseph Giuffre: “Biomolecular controls over nucleation: Insights to calcium carbonate formation and geochemical signatures”

Liang Han: “Seismic imaging and thermal modeling of rift processes in the Salton Trough, California”
Endowed Scholarship

Shreya Singh: “Exploring the relationship between crustal permeability and hydrothermal venting at mid-ocean ridges using numerical models”
Endowed Scholarship

The Commencement Speaker

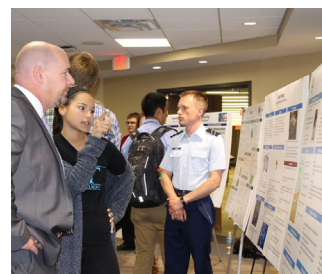


The Department of Geosciences would like to extend a special “thank you” to Seth Stein for his wonderful Commencement Address. Stein is the William Deering Professor of Geological Sciences at Northwestern University. He graduated from MIT with a B.Sc degree in 1975 and a Ph.D. from Caltech in 1978. He has authored more than 150 scientific publications in research areas that include plate tectonics, earthquake seismology, earthquake hazards, and space geodesy. He has been awarded the James B. Macelwane Medal of the American Geophysical Union, the George Woollard Award of the Geological Society of America, the Stephan Mueller Medal of the European Geosciences Union, the Price Medal of the Royal Astronomical Society, and a Humboldt Foundation Research Award. He has been elected a foreign member of the Academy of Europe, a Fellow of the American Geophysical Union and Geological Society of America, and named to the Institute for Scientific Information Highly Cited Researchers list. He was one of the organizers of EarthScope, a national initiative to dramatically advance our knowledge of the structure and evolution of North America, served as Scientific Director of the UNAVCO consortium of universities using GPS for earth science, and been Visiting Senior Scientist at NASA’s Goddard Space Flight Center. He started Northwestern’s Environmental Science program and is active in the geophysical community’s public education programs and completed a national tour as a Distinguished Lecturer of the Incorporated Research Institutions for Seismology and the Seismological Society of America.

Geosciences News



This past semester, John Chermak taught Resources and the Environment as a [pathways pilot course](#) to approximately 75 undergraduate students, which culminated with a poster session at the end of the semester. The main theme of the course was applying the idea of Cradle to Grave to energy resources which allowed students to critically evaluate current and future energy use and also determine the advantages and disadvantages of individual energy sources including the environmental and social impacts. Chermak applies an active teaching philosophy to his classes, encouraging students to use clickers and group work in order to promote student learning and engagement. This course is part of a University wide effort to transform general education at Virginia Tech, and Chermak is currently a [pathways scholar](#).



From [The Washington Post](#): Martin Chapman and Jake Beale are the Virginia Tech researchers referred to in this article about damage to the Washington Monument that was caused by the 2011 Mineral, Virginia earthquake. Results from the VT research indicate that DC sits atop oceanic sediments that make the city more prone to shaking.

From [Fractracker.org](#):

Research from the [Virginia Tech Seismological Observatory \(VTSO\)](#) is featured in this two-part series about the science behind Oklahoma’s induced seismicity problem.



The article is written by Ariel Conn, a member of the VTSO, and Martin Chapman, who heads the group, also provided insight and assistance. The article details both the history of induced seismicity, as well as work done by Chapman and Conn.

Awards, Grants & Other Honors

Mark Caddick (PI) and Besim Dragovic (co-PI) received an NSF grant for \$363,761 for their research titled, “Durations and rates of high temperature metamorphism during Archean orogenesis: implications for early Earth’s tectonics.”

Victor Guevara received a \$9,494 EarthScope Geochronology award for his work with the Princeton Radiogenic Isotopes lab to obtain very high precision ages for accessory minerals in Archean metamorphic rocks.

Tiffany Jebson was awarded a GSA Graduate Student Research Grant for her proposal titled “Predicting Occurrences of Arsenic in Groundwater in Virginia as a Tool for Exposure Assessment.”

Congratulations to Qimin Wu for winning the Outstanding Student Presentation Award at the 2015 Annual Seismological Society of America meeting in April for his talk, “Coulomb Stress Changes due to the 2011 Mw 5.8 Mineral, Virginia Earthquake.”

Shuhai Xiao was recently awarded a three-year grant totalling \$228,498 from NASA Exobiology and Evolutionary Biology for his proposal titled “Investigating the origin of Proterozoic intracellular structures”

Shuhai Xiao has been invited to be a 2016-2017 Phi Beta Kappa Visiting Scholar.

Brady Ziegler was awarded a GSA Graduate Student Research Grant for his proposal titled “ A mass balance approach to arsenic cycling in petroleum hydrocarbon plumes.” He also received special recognition for having one of the top five research proposals in the Hydrogeology Division.

Brady Zieger was also awarded the Frank E. Kottowski Memorial Grant from the AAPG.

Publications & Conferences

Kyle Ashley became an editor for the American Journal of Geoscience.

Cai, Y., S. Xiao, H. Hua, and X. Yuan, 2015. New material of the biomineralizing tubular fossil Sinotubulites from the late Ediacaran Dengying Formation, South China. *Precambrian Research*, 261: 12–24.

Chen, A.-L., W. E. G. Müller, X.-G. Hou, and S. Xiao, 2015. New articulated protospongiid sponges from the early Cambrian Chengjiang biota. *Palaeoworld*, doi:10.1016/j.palwor.2014.11.006.

Cozzarelli I, Schreiber M, Erickson M, Ziegler B. 2015 (available online 1/21/15). Arsenic cycling in hydrocarbon plumes: Secondary effects of natural attenuation. *Groundwater*. doi: 10.1111/gwat.12316.

Publications & Conferences cont...

Cui, H., A. J. Kaufman, S. Xiao, M. Zhu, C. Zhou, and X.-M. Liu, in review. Redox architecture of an Ediacaran ocean margin: integrated chemostratigraphic ($\delta^{13}\text{C}$ - $\delta^{34}\text{S}$ - $87\text{Sr}/86\text{Sr}$ - Ce/Ce^*) correlation of the Doushantuo Formation. *Chemical Geology*, 405: 48-62.

Kendall, B., T. Komiya, T. W. Lyons, S. M. Bates, G. W. Gordon, S. Romaniello, G. Jiang, R. A. Creaser, S. Xiao, K. McFadden, Y. Sawaki, M. Tahata, D. Shu, J. Han, Y. Li, X. Chu, and A. D. Anbar, 2015. Uranium and molybdenum isotope evidence for widespread ocean oxygenation during the late Ediacaran Period. *Geochimica et Cosmochimica Acta*, 156: 173-193.

Muscente, A. D., F. M. Michel, J. Dale, and S. Xiao, 2015. Assessing the veracity of Precambrian 'sponge' fossils using in situ nanoscale analytical techniques. *Precambrian Research*, 263: 142-156.

Pang, K., Q. Tang, X. Yuan, B. Wan, and S. Xiao#, 2015. A biomechanical analysis of the early eukaryotic fossil *Valeeria* and new occurrence of organic-walled microfossils from the Paleo-Mesoproterozoic Ruyang Group. *Palaeoworld*, doi:10.1016/j.palwor.2015.04.002.

Schreiber M, Schwartz B, Orndorff W, Doctor D, Eagle S, Gerst J. 2015. Instrumenting caves to collect hydrologic and geochemical data: Example from James Cave, Virginia, in Younos T and Parece T (eds). *Advances in Watershed Science and Assessment, Handbook of Environmental Chemistry*, v. 33, pp. 205-231; Springer.

Shuhai Xiao has been appointed an associated editor of "Scientific Reports."

Ye, Q., J. Tong, S. Xiao, S. Zhu, Z. An, L. Tian, and J. Hu, 2015, The survival of benthic macroscopic phototrophs in a Neoproterozoic snowball Earth. *Geology*, 43: doi:10.1130/G36640.1.

Ying Zhou visited the Geophysics Department at Ludwig Maximilian University of Munich and gave a talk at "Diffractional Tomography of Mantle Transition Zone."

"Receiver Function Diffractional Tomography of Mantle Transition Zone Structure" by Ying Zhou at the European Geosciences Union (EGU) General Assembly 2015 Vienna, Austria.

"Diffractional tomography of seismic structures at major discontinuities" by Ying Zhou (invited) at workshop "Three decades of development in seismic tomography beneath land and oceans", Nice, France.