



ROBERT HAZEN

Friday: “Mineral Evolution: the 4.5-Billion-Year Story of Earth”

Saturday: “Time’s Second Arrow: Evolution, Information and a New Law of Nature”

Robert M. Hazen, Staff Scientist at the Earth and Planets Laboratory of Carnegie Science in Washington, DC, and Robinson Professor of Earth Sciences, Emeritus, at George Mason University, received degrees in geology from MIT and Harvard. Author of more than 550 articles and books on science, history, and music, Hazen has been recipient of numerous awards, including the 2025 AGI Legendary Geoscientist Medal, the 2021 IMA Medal, the 2016 Roebling Medal of the Mineralogical Society of America, and the 2012 Virginia Outstanding Faculty Award. His book *The Story of Earth* (Viking-Penguin) was finalist in the Royal Society and Phi Beta Kappa science book competitions. The biomineral “hazenite,” as well as a fossil dolphin and a fossil hermit crab, were named in honor of Robert and Margaret Hazen. Since 2008, Hazen and his colleagues have explored “mineral evolution” and “mineral informatics”—new approaches that exploit large and growing mineral data resources to understand the co-evolution of the geosphere and biosphere. In October 2016 Hazen retired from a 40-year career as a professional trumpeter, during which he performed with numerous ensembles including the Metropolitan Opera, Royal Ballet, and National Symphony.

“Mineral Evolution: the 4.5-Billion-Year Story of Earth”

Minerals tell the dramatic story of Earth. The 6000 known mineral species reveal dramatic increases in diversity and complexity through more than 4.5 billion years of our planet’s evolution. This astounding mineral diversity arises from a sequence of new physical, chemical, and ultimately biological processes, each of which created new mineral-forming environments. Minerals are now understood to have played key roles in the origins of life, and they provide clues to the subsequent co-evolution of life and minerals.

“Time’s Second Arrow: Evolution, Information, and a New Law of Nature”

A pervasive wonder of the natural world is the evolution of varied systems, from stars to minerals to life. However, no law of nature describes and explains, much less quantifies and predicts, the behavior of complex evolving systems. Accordingly, our group has proposed a new law of nature, the “law of increasing functional information.” This concept has now been applied by other groups in fields as wide-ranging as the evolution of languages, the behavior of AI systems, and the search for new cancer therapies. Mineral evolution, which explores the diversification of Earth’s mineral kingdom on more than 4.5 billion years, is a revealing test case of this proposed law of nature.



RACHEL GNIESKI

Friday: “Single Crystal X-ray Diffraction, Start to Finish”

Saturday: “How to Make Museum Records Easier to Find and more Accessible for Everyone, an Exercise in F.A.I.R. Practices”

Rachel Gnieski grew up in south Florida spending her days either at the beach looking for shells and critters in the ocean or in the local swampy nature reserve, also looking for critters. She wanted to go to school for physics, but after taking an Earth Science class at Palm Beach State College she decided to go to Louisiana State University where she received a bachelor’s degree in geology. She liked mineralogy and petrology so much that she decided to stay at LSU for graduate school, working with Darrell Henry on the Archean Chromitites of the Beartooth Mountains of Montana.

RACHEL GNIESKI, cont'd

After receiving her master's and working a few odd jobs in Somerville, Massachusetts she was hired at the Harvard Mineralogical and Geological Museum and has been there since 2023.

“Single Crystal X-ray Diffraction, Start to Finish”

Single crystal X-ray Diffraction has been around for over a century now and the concepts are the same, but the techniques have changed with the advance of technology. In the past couple of decades, the process has become highly automated, one can almost find a mineral's unit cell at the push of a button. As a result, knowing what is going on behind the scenes has become less necessary, but lack of scrutiny can lead to bad results. To get a good result, one still needs to understand crystallography, mineral chemistry, and the experiment itself. In this talk I will briefly go over the basic concepts of crystallography, single-crystal X-ray diffraction, and solving a crystal structure. I will then show the implementation of these concepts by going through a single-crystal X-ray diffraction experiment from start to finish, from picking a crystal, running the experiment, and refining the data to solving a crystal structure. By taking a step-by-step approach to this concept, I hope to make this tough topic digestible for any mineral enthusiast.

“How to Make Museum Records Easier to Find and more Accessible for Everyone, an Exercise in F.A.I.R. Practices”

In this talk Rachel will go over the museum's best practices for preserving and improving the accessibility of data associated with our collections and museum constituents. I will go over an ongoing project in which we are digitizing the museum's archives and collections and making them publicly available and what considerations need to be made in doing so. A large component of this effort is making our collections searchable through our online database by implementing aspects of the Findable, Accessible, Interoperable, and Reusable Guiding Principles for Digital Asset Management. Rachel's goal for this project is to be able to quickly and reliably access data on our collections and archives for researchers and the public alike.

**JIM NIZAMOFF****"Microminerals, Another World in Mineral Collecting"**

Jim Nizamoff was born in Putnam, Connecticut in December 1971. After discovering his mother's college introductory geology rock and mineral set at the age of 7, it became clear that he would have a lifelong love of minerals and geology. After high school, Jim decided to attend the University of Maine at Farmington (UMF) to attain an undergraduate degree in geology. While attending UMF, he learned about a short course on granitic pegmatites offered by Dr. Michael Wise of the Smithsonian Institution. During the short course, Jim realized that pegmatites are by far the coolest rocks and decided that he should study them in greater detail. After completing his undergraduate degree in geology/chemistry at the University of Maine at Farmington in 1996, Jim

attended the University of New Orleans (UNO) in New Orleans, Louisiana to pursue a master's degree in geology. Dr. William "Skip" Simmons provided Jim the opportunity to work on the Palermo No. 2 pegmatite in North Groton, New Hampshire. With the assistance of Bob Whitmore of Weare, New Hampshire (owner of the Palermo property), Jim began his master's research in the summer of 1997. In addition to his master's project, Jim took full advantage of opportunities to work on many other research projects; attend numerous scientific meetings and field trips: Madagascar (1998 and 2001), Brazil (2000), Namibia (2003) and Italy (2005); and work part-time as a petrologist/mineralogist at Crescent Technology, Inc. (a subsidiary of Freeport McMoran Copper and Gold) in Belle

JIM NIZAMOFF, cont'd

Chasse, Louisiana. Jim received his M.S. degree in Geology from the University of New Orleans in August 2006. He then left New Orleans to work as a mineralogist for Omya, Inc. in Proctor, Vermont. Jim was employed at Omya from August 2006 to February 2016, and was a self-employed mineralogical consultant from March 2016 through August 2023. He currently works in the radioactive materials section of the Radiation Control Program at the Maine CDC. Jim was fortunate to discover several new mineral species during his time at UNO and was thrilled to have the mineral 'nizamoffite' $Mn_2+Zn_2(PO_4)_2(H_2O)_4$ named in his honor in 2012. Jim currently resides in Hebron, Maine with his wife Chandra and sons Aaron and Daniel. He continues to be active in the local mineral community serving as vice president of the New England Mineral Association and is an active member in the Micromounters of New England. Jim has numerous scientific publications and continues to participate in mineralogical research projects. He was a part of the Maine Pegmatite Workshop faculty from its 2022 inception through 2018 and is a member of the ownership group of the Palermo pegmatites in North Groton, New Hampshire.

"Microminerals, Another World in Mineral Collecting"

Jim will provide reasons why microminerals are important in mineralogy and why we should care about them as mineral collectors. Topics covered will include how to find and identify microminerals; how to preserve them, view them and share with others; how it is possible to contribute to the science of mineralogy through collecting microminerals. Another aim of the talk is for the audience to gain a sense of how accessible the world of microminerals is.



JEFF MORRISON

Friday: "A Short Update on the NEMA Geoscience Portal"
Saturday: "Logistics of Mining the Tamminen-Waisenen"

Jeffrey Morrison is one of the founders of the New England Mineral Association and has served as its President since the beginning. Along with owning a residential excavation company, R. L. Morrison Excavating, Jeff has owned a land development firm, and prior to that was one of the three partners of Estabrook Nurseries, tirelessly bringing the company from a smaller farm-stand business to its place as one of the top five plant nurseries in Maine. In the mineral world, Jeff is the owner of the Havey Quarry, the Llama-Llama Mine, and (with Larry Stifler) the Frank C. Perham Mineral Park.

Long known as an advocate of education and research, Jeff has worked to establish the Geoscience Portal as a major part of the NEMA website. His talk on Friday will speak to where those efforts lie at present. He has taken on a personal research project of historical articles on mining in New England, and specifically of the Havey Quarry that he owns, and where he and his wife Jan have built their home and mineral lab/workshop. Most any time Jeff is in a mining or mineral locality, you'll find the couple's two Boston Terriers, Razzmatazz and Calvin, who he terms as his best mining partners (because they rarely complain and never offer advice).

"Logistics of Mining the Tamminen-Waisenen"

Jeff's talk will bring a sense of the logistics of reopening the Tamminen/Waisenen quarries in Greenwood, ME. Larry Stifler and Jeff Morrison purchased these quarries to be able to keep them open to the public. In 2025 work resumed to be able to start a new story in finding minerals at these localities. He will tell the adventures of building out the infrastructure that has taken place and what the expectations are for the upcoming season and the future. If time allows, Jeff will also do some Q/A on public access to the quarries and more...

SONCRANT, SASSI & FELCH

"Newest Mineral Find at Georgetown, Maine"

These three men will provide different aspects of the work going on in the Georgetown area and the recent discovery of spodumene in the locality. Note: our featured mineral for this year's NEMC poster is one of the specimens from the Georgetown spodumene deposit.



DAVID SONCRANT

David earned a B.A. in Geography-Anthropology with minors in Historical Archaeology and GIS technologies from The University of Southern Maine. David has been passionate about discovery his entire life. He first got on the mineral track as a young boy when he found a marine shell fossil at the top of Fred's Mountain (9,875ft above sea level) in Wyoming. David and his fiancée, Sarah, make their home in Sumner, Maine.

His passions lie in exploration and discovery, compiling and searching old historical records, and using lidar imagery and GIS technologies to find long-lost quarries and mines all over Western Maine. He has also discovered some new mineral deposits in Oxford County that may provide new information to the scientific, mining, and

collecting communities in the future. David is always saying "You never know what is beneath your feet, until you really look!"



JOHN SASSI

John is a custom finish carpenter, & self-proclaimed mountain man who has worked tirelessly at establishing his new prospects in Stoneham, Maine. a 9- year endeavor there has brought to light, new Amethyst, Garnet & Aquamarine localities. John is building a home right in the thick of Maine's pegmatite belt, and below the Red Carpet and Magna Futura Mines that he owns. Working largely as a one-man crew Sassi spent years prospecting, hand-digging, and slowly proving out the Red Carpet pocket system. The Red Carpet reflects Sassi's "thrill of the hunt" approach to exploring his mountain.

In 2023, Sassi collaborated with fellow miner Jeff Morrison on a short exploratory season using larger equipment to test the deposit on a bigger scale; revealing several additional amethyst pockets and further exposed the pegmatite. Similar exploration at the Magna Futura met with mixed results, but the promise of more exploration to follow in the coming years. Most recently John worked with fellow Maine miner, Gary Howard at his mine in Georgetown, producing some beautiful tourmalines and uncovering an area of spodumene, which is the focus of this talk.



MYLES FELCH

Myles Felch is a Curator at the Maine Mineral & Gem Museum. He grew up in Union, Maine and has a B.A. in geology from the University of Maine at Farmington, and an M.S. in geology from the University of New Orleans where he first studied granitic pegmatites in western Maine.

Through his work as a curator on the major Lithium/Spodumene Exhibit in the Discovery Gallery at MMGM, Myles became quite knowledgeable about the extraction and uses of lithium across the world and has given many talks about the subject to clubs, organizations, and conferences/professional meetings.

For the past decade, Myles has continued to pursue his research interests in Maine pegmatites by collaborating with other experts who also seek to understand the relationship of pegmatites within Maine's regional tectonic framework.