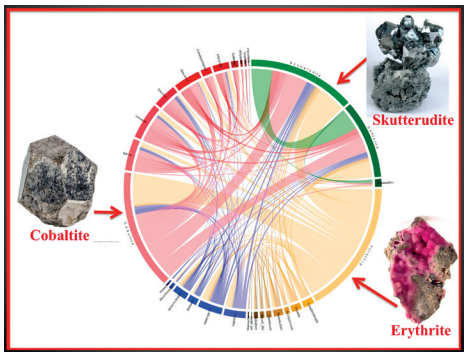
International Mineralogical Association

www.ima-mineralogy.org

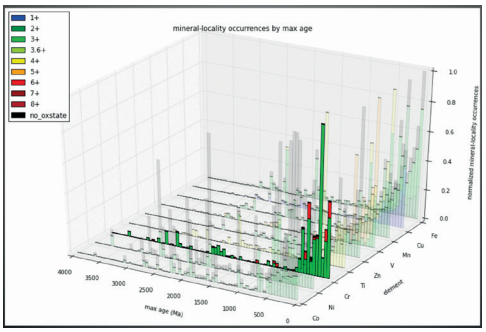
NEWLY ANNOUNCED: THE IMA WORKING GROUP ON MINERAL INFORMATICS

Informatics, or information science, focuses on all aspects of extracting information from data. The objectives of informatics include assembling and providing access to well-curated data resources, developing and applying advanced analytical and visualization methods, and the interpretation of results after applying these methods. Open and reliable data resources that conform to FAIR (Findable, Accessible, Interoperable, and Reusable) practices are an essential pillar of scientific advances through informatics. Mineralogists have long benefitted from open-access data resources such as mindat.org, rruff.info, and earthchem.org, but a significant amount of published and unpublished data on mineral occurrences, compositions, physical properties, and other attributes are not yet available on any open-access platform. Most mineralogical publications do not require new data to be deposited in an open-access form, nor are there uniform standards for reporting such data.

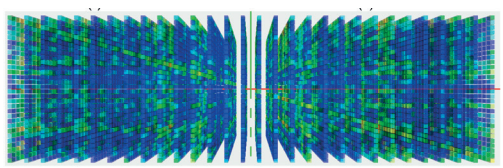


Chord diagram illustrating co-existing pairs of the 30 most abundant cobalt-bearing minerals. These data reveal significant correlations between cobalt and arsenic mineralization.

Accordingly, significant opportunities exist to improve the accessibility and reliability of a wide range of mineralogical data, as well as to develop and disseminate analytical and visualization methods to advance mineralogical research. We hope to start a conversation among engaged members of the community to identify needs and opportunities, to formulate best practices, to encourage a culture of data sharing among members of the Earth and planetary materials community, and to develop and share new resources.

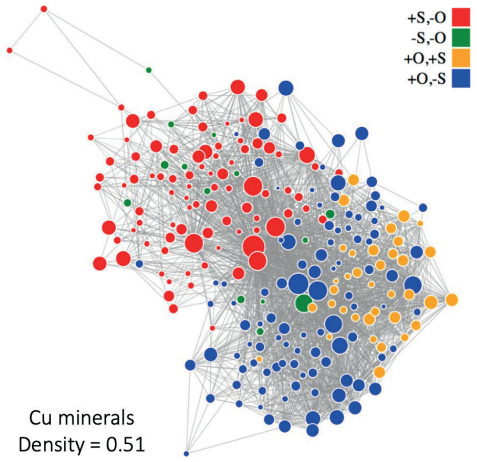


"Skyline diagram" of the temporal distribution of minerals containing 10 first-row transition elements colored according to the oxidation state. These data display episodic mineralization associated with the supercontinent cycle and changes in oxidation states associated with increases in atmospheric oxygenation.

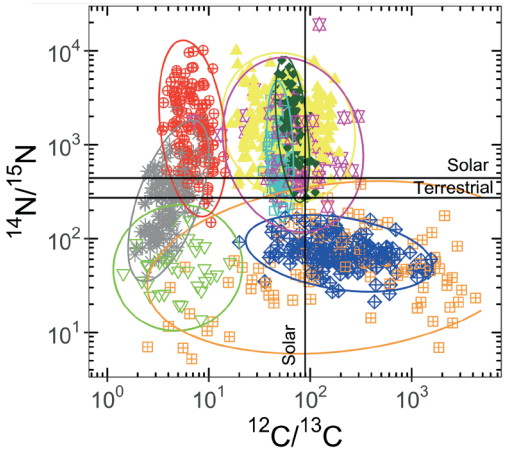


Three-dimensional 30 × 30 × 30 (27,000-matrix-element) Klee diagram revealing the relative abundances of minerals with three different co-existing chemical elements. Brighter colors indicate three-element combinations that are more common than predicted by crustal abundances.

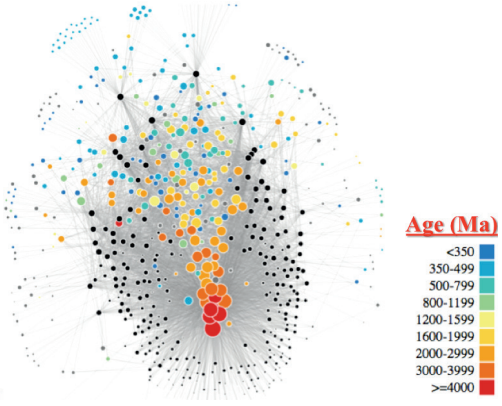
Accordingly, Sergey Krivovichev, Shaunna Morison, Yan Li, and Robert Hazen have been asked to lead a new International Mineralogical Association called the "Mineral Informatics Working Group." As a first step, we are developing a list of interested mineralogical community members. If you would like to receive future notices, and perhaps participate in this effort, please email Robert Hazen at rhazen@ciw.edu.



Network diagram illustrating the co-existence of 243 copper-bearing minerals (each represented by a circle). Sizes indicate relative abundances, while colors are based on mineral chemistry. Embedded in this diagram are gradients of the oxygen and sulfur activity.



Cluster analyses of stellar silicon carbide grains, based on isotope ratios, revealing various types of parent stars, including AGB stars and supernovas.



Bipartite network of carbon-bearing minerals (colored circles, sized according to their abundances) illustrating links to their localities (black circles, sized according to the number of carbon minerals). Colors indicate relative ages, which decrease from the center of the graph to the periphery.