New Mineral: Rubinite

The first natural occurrences of rubinite, \( \text{Ca}_3\text{Ti}^{3+}_2\text{Si}_3\text{O}_{12} \), were discovered independently by two science teams headed by Dr. Chi Ma (CalTech) and Dr. Takashi Yoshizaki (Tohoku University) during investigations of the carbonaceous chondrites Vigarano [Data link from the Meteoritical Database], Allende [Data link from the Meteoritical Database], and Efremovka [Data link from the Meteoritical Database].

The new titanium-rich garnet mineral is named after Dr. Alan E. Rubin, a research geochemist at the University of California at Los Angeles, whose expertise spans meteoritics and cosmochemistry—from tiny chondrules to meteorite parent asteroids.

Rubinite was identified as tiny crystals in calcium-aluminum-rich inclusions (CAIs), and is among the first solids formed in the solar nebula. Researchers say the mineral either condensed from solar nebula gas or it crystallized from an \(^{16}\text{O}\)-rich Ca, Al, and Ti-rich melt under highly-reduced conditions about 4.6 billion years ago. Post-crystallization oxygen-isotope exchange occurred either while still in the solar nebula and/or on the meteorite parent asteroid.

Studies of these early-formed refractory solids are furthering our understanding of nebular evolution and the formation of asteroids and planets.

The mineral and name, rubinite, were approved in March, 2017 by the International Mineralogical Association's Commission on New Minerals, Nomenclature, and Classification.

See Reference:
See also:
· Alan Rubin’s publications.
· Discovery of Rubinite, session talk at the 80th Annual Meeting of the Meteoritical Society, 2017.
· Tohoku University New Mineral News Release
· UCLA New Mineral News Release

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