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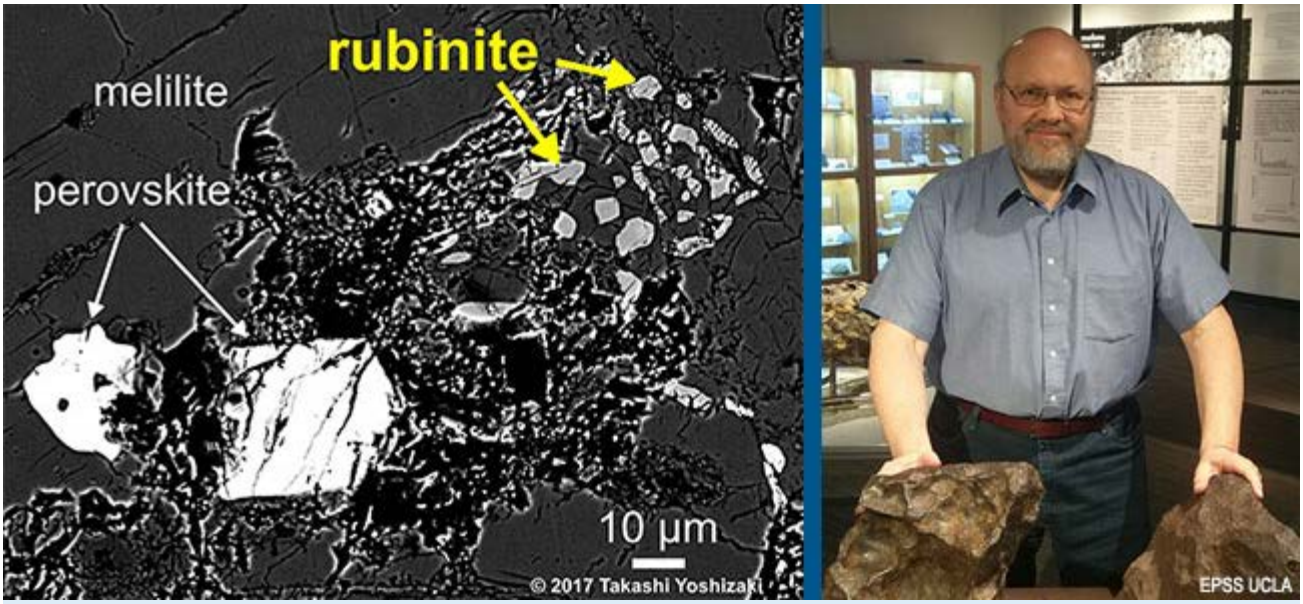
New Mineral: Rubinite

The first natural occurrences of rubinite, $Ca_3Ti^{3+}{}_2Si_3O_{12}$, 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***.



[LEFT] Scanning electron microscope image of new mineral, rubinite, from the Allende meteorite. Perovskite and melilite are common minerals in calcium-aluminum-rich inclusions. Image courtesy of Takashi Yoshizaki, Tohoku University, ***news release***. [RIGHT] Dr. Alan Rubin, namesake of new mineral, with UCLA meteorite collection. Image courtesy of UCLA Department of Earth, Planetary, and Space Sciences, ***news release***.

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}O-rich Ca, Al, and Ti-rich melt under highly-reduced conditions about 4.6 billion years ago. Post-crystallization oxygen-isotope exchange occured 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:
· Ma, C., Yoshizaki, T., Nakamura, T., and Muto, J. (2017) Rubinite, IMA 2016-110. CNMNC Newsletter No. 36, April 2017, page 408; *Mineralogical Magazine,* v. 81, p. 403-409, doi: 10.1180/minmag.2017.081.022. [***link***, may require login]

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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