



Colorado Scientific Society

Online Lecture Announcement

Thursday, November 19, 2020 at 7:00 pm

(link available at <https://coloscisoc.org/> earlier that week)

The rock that cried silver tears - The Early Jurassic Springdale Sandstone and its unusual precious metal mineralization at Silver Reef, UT, revisited

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Abstract: The Early Jurassic Springdale Sandstone Member of the Moenave Formation at Leeds, UT, is one of the most unusual precious metal deposits in the world. Void of any recognizable hydrothermal activity, this sheet-like, 30 m thick, fluvial sandstone contains the rare minerals cerargyrite (AgCl; Horn Silver), bromargyrite (AgBr), and iodargyrite (AgI) in mineable quantities. Because mineralization is finely disseminated in an otherwise unaltered sedimentary rock, it was initially considered a hoax following its discovery in 1866. However, the Silver Reef mining district produced over 7 million ounces of Ag between 1875 to 1909 at a value close to \$8,000,000. Later, the same rocks were mined for uranium during the cold war period.

The first scientific investigation of the deposit was completed in 1953 by the late Paul Dean Proctor. Subsequent studies yielded multiple hypothesis for the unusual ore mineralization, but no compelling genetic model. Since then, sophisticated instrumentation, such as portable X-ray fluorescent (XRF) spectroscopy and scanning electron microscopy (SEM) with in-situ EDS microanalysis, have created novel possibilities for geochemical reevaluation. Mineralization in the Springdale Sandstone have been revisited through a series of undergraduate research projects at the Department of Earth & Atmospheric Sciences at Metropolitan State University of Denver. This presentation will pay homage to Paul D. Proctor's work while introducing the audience to some of the exciting undergraduate research projects on this most unusual deposit.

Dr. Uwe Richard Kackstaetter received his B.A. in Geology from the University of Northern Colorado, his M.S. in Geology from BYU, Provo and his Ph.D. in Applied Geology and Mineralogy from the University of Würzburg, Germany. His professional expertise ranges from environmental testing and geohydrologic investigations to minerals and igneous petrology. He has taught earth science at the college and secondary levels, and lead national and international geological field courses. Dr. Kackstaetter's current interests are applying advanced tools to geoscience problems, including field specific-gravity testing, automated percolation testers, wavelength-dependent night prospecting tools, improved processes of rock and mineral thin sectioning, field-portable cation chromatography and clay-mineral analytical processing and computations. He currently works as Full Professor of Geology at Metropolitan State University of Denver where he advocates for undergraduate research in meaningful geoscience studies in both in Europe and the US.

