New Data for Undescribed Uranyl Minerals Supporting the CURIES Database

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Data are presented for three potential new uranyl minerals, including a calcium aluminum uranyl carbonate fluoride from the Uranus mine, Saxony, Germany, a lead uranyl selenite from the Miedzianka mine, Lower Silesia, Poland, and an iron aluminum uranyl sulfate vanadate from the North Mesa mine, Emery County, Utah, USA. Making accurate mineral identifications and assignments of vibrational spectra for some uranyl minerals is extremely difficult in the absence of chemical or crystallographic data, particularly for sulfates, which can exhibit nearly identical band positioning and splitting. Spectral broadening and admixtures of multiple minerals can confuse pattern matching algorithms employed by other identification software. We are currently seeking well-characterized samples of uranyl minerals currently lacking vibrational spectra to include in the CURIES database, a Compendium of Uranyl Raman and Infrared Experimental Spectra developed by scientists at Oak Ridge National Laboratory.