

Uranium mineralogy and crystallography: perspective field or a dead-end? *EMU Research Excellence Medal Lecture*

JAKUB PLÁŠIL

Czech Academy of Sciences

Uranium mineralogy and crystallography both have undergone a vast development at the end of the last century and the beginning of the 21st century. Nowadays, more than 260 uranyl minerals, thus containing a hexavalent form of uranium, are known from Nature. They are mostly connected with the oxidation-hydration alteration processes in the near-surface, or surface conditions [1-2]. Revealing their complicated crystal structures helped us complete the entire puzzle of physical and chemical properties and understand the relationships between them. More than about 850 well-determined structures of U^{6+} minerals and inorganic compounds are known so far (updated figure from [3]). What are the next goals of the mineralogically/crystallographically oriented research related to waste management involving spent/used nuclear fuel [4]? Are there some future perspectives? This talk aims to review some of both yet-untouched and known topics and possibilities for the future research.

[1] Krivovichev & Plášil (2013), Uranium: From Cradle to Grave. *Mineralogical Association of Canada Short Courses* 43, 15-119.

[2] Plášil (2014), *Journal of Geosciences* 59, 99-114.

[3] Lussier, Lopez & Burns (2016), *The Canadian Mineralogist* 54, 177-283.

[4] Ewing (2015), *Nature Materials* 14, 252-257.