

Abstract Submission

*T3 - Minerals, systematics, gems, collections
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Uraniferous minerals collections: a new method for the estimate of radio-activity

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Abstract Content: Although uranium is considered one of the most dangerous elements in the world, uranium minerals are highly sought-after from mineral's collectors. Autunite, Vandenbrandeite, Uraninite, Torbernite, Sklodowskite, are the most common mineralogical species involved, both massive or with various habits, from equant to needle shaped.

Manipulation, storage and exhibitions of such minerals collections, nevertheless, arises some radioprotection issues since well-established radiation protection guidelines are lacking. The main problem is represented by the radio-activity estimation of uraniferous minerals, due to the not simple manipulation of the specimens caused by the ionising radiation.

Moreover radiometric quantities depend from several parameters. The large uncertainty in the evaluation of the radio-activity is in fact depending from samples modelling approximations. A new procedure, which takes into consideration sample size, ores composition and measured radiation, is therefore proposed in order to evaluate uraniferous specimens radio-activity, based on simple radiometric measurements. Extended-source effects were taken under consideration and the experimental set-up was designed to reduce the measurement uncertainty. The radio-activity of a group of uraniferous mineral specimens belonging to the Barsotti Collection, and now part of the Natural History Museum of the University of Florence collections, was measured through this procedure. This methodology may represent a guide for uraniferous specimens manipulation, conservation and exhibition and can be easily generalized to other minerals collections.

References: Freedman, J. "Storage of the Radioactive Mineral Collections at Plymouth City Museum and Art Gallery, UK." *Collections* 7 (2), 201–212 (2011).

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