



13. medzinárodné Erbe sympóziium
13th International Symposium/13. "Erbe" - Symposium
15. - 20. júna 2015, Banská Štiavnica, Slovensko
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How to breathe new life into a historical collection of synthetic crystals?

„Wie man eine historische Sammlung von synthetischen Kristallen aus dem Dornröschenschlaf weckt.“

„Ako vdýchnuť nový život do historických zbierok syntetických kryštálov?“

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Abstract

A compilation of 194 historical bell jars including a sum of more than 1.000 synthetic single crystals, belonging to the collections of the Geological Survey of Austria, was restored in the last year, to conserve it for further deterioration (Fig.1). The intent was, to present the formerly scientific important and splendid crystal-collection for the future as a contemporary document. The collection originates from the second half of the 19th century and was a mixture of syntheses which were essentially done by the German chemist *Rudolf Christian Bö(e)ttger* (1806-1881) and the Austrian chemist *K(C)arl Ritter von Hauer* (1819-1880).

In 1853, the 'k.k. Geologische Reichsanstalt' (Geological Survey of Austria) acquired a suite of 140 synthetic crystals as a donation from *R. Böttger*. This special collection consists of different synthetic soluble single crystals, mostly cyanides, fluorides, acetates, chlorates, formates, nitrates, oxalates and a large number of hydrous and anhydrous sulphates (Zepharovich, 1853: p.417). *K. Hauer* who got a temporary position in the laboratory of that institution in 1854, also started with growing crystals, and as mentioned by Haidinger (1859: p.162-163), since then, crystals of both scientists were exhibited together in two showcases in the museum of the 'k.k. Geologische Reichsanstalt' (N.N., 1880: p.230).

For his presentation of extraordinary synthetic crystals at the London International Exhibition of 1862, *K. Hauer* was honoured with a prize medal and the 'Golden Verdienstkreuz mit der Krone', (N.N.^a, 1862). Furthermore, he was appointed as head of the chemical laboratory at the 'k.k. Geologische Reichsanstalt' in 1866, where he continued crystal syntheses and brought it to perfection (Hauer,

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1876: p. 14). Crystals of both producers are the fundamentals of crystallographic and optical investigations done by *K. Hauer* himself, but also by *Wilhelm Josef Grailich* (1829 - 1859) and many others (Grailich, 1858). The relevance of these crystal syntheses and the associated investigative results opened the state of knowledge even for the future, (N.N., 1880). A big part of the collection survived time and several relocations.

After a comprehensive restoration in 2014/2015, the bell jars were dismantled to fix fractured single crystals with glue on wooden sticks. The glasses were cleaned from weathering products, glued together if necessary and after drying, they were closed with a cork stopper and resealed with sealing-wax, as it was described in detail, (N.N.^b, 1861-1862). In addition, the historical numbers and labelling were cleaned and pasted up newly.

Contemporaneously, about 110 of the weathered and partly destroyed crystals were analysed by X-ray powder diffraction in order to prove their chemical composition.

After the successful finalisation of this restoration project, the plan is, to exhibit once again the most attractive crystals at the Geological Survey of Austria.

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Fig.1. One of several boxes with bell jars including different synthetic crystals, before restoration.

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