



If you wish upon a star. Chiemite: an Anthropocene pseudo-impactite

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Since the beginning of the Anthropocene, mankind has produced a variety of artificial materials in large quantities which now contribute to the composition of modern sediments. Some of these materials may closely resemble natural rocks or minerals and transported and weathered anthropogenic matter is particularly hard to distinguish from natural materials. The clarification of the origin, depositional history and cultural context requires an interdisciplinary approach involving archeology, material sciences and earth sciences, as well as an awareness for anthropogenic influences on the geological record.

Coal products such as coke have been widely used in Bavarian (southern Germany) households and businesses during the last centuries and their remnants frequently were disposed of in the environment without much care. Such materials and remnants, when taken superficially, may be mistakenly identified as exotic natural materials. In recent years, samples taken by non-specialists from the Lake Chiemsee area have been misdiagnosed as meteorite impact matter and have caused controversial discussions about their cosmic origin. Here, a cosmic impact has been claimed to have produced exotic materials found in Quarternary sediments of Bavaria.

In our study, we investigated carbonaceous samples from southern Bavaria which have recently been claimed to represent a new type of impactite, the so-called 'Chiemite' (Shumilova et al., 2018). We analysed samples of 'Chiemite' given to us by the same non-specialists which collected the material investigated by Shumilova et al. using XRD, SEM and FTIR-ATR microanalytical techniques and compared them against a coking coal reference sample. The absence of minerals and microfeatures related to meteorite impacts in the Chiemite samples, as well as the high degree of similarity to the coal reference material, indicate that the site did not experience any cosmogenic activity. Simply, the combination of anthropogenic imprints left by excavation of coal, the scattering of coal-related materials, and face-value research has led to a misinterpretation of the local geological profile.

Reference:

Shumilova, G.; Isaenko, S.I.; Ulyashev, V.V.; Makeev, B.A.; Rappenglück, M.A. Veligzhanin, A.A.; Ernstson, K. (2018): Enigmatic Glass-Like Carbon from the Alpine Foreland, Southeast Germany: A Natural Carbonization Process. *Acta Geologica Sinica*, Vol. 92(6), pp. 2179–220.