WHAT IS MASKELYNITE? BACK TO THE ORIGINAL DESCRIPTION AND THIN SECTIONS IN WHICH IT WAS FIRST DESCRIBED.

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Introduction: A large number of meteorites as well as rocks affected by hypervelocity impacts are more or less shocked, and, based on the preserved shock effects in rock-forming minerals that occur in these samples, peak-shock pressure are usually estimated. These shock effects are, with increasing peak-shock pressure: fracturing, plastic deformations, phase transformations (including diaplectic glasses [formed without melting, by solid-state transformation] and high pressure polymorphs), and melting. A shock indicator that is commonly noted, especially in the case of achondrites and feldspar-bearing terrestrial impactites, is the plagioclase feldspar glass phase, so-called "maskelynite".

Here we present a brief review of what Gustav Tschermak first described as being maskelynite [1,2], and suggest to use the word "maskelynite" in proper agreement with the original definition.

Review: G. Tschermak was the first to report on maskelynite, a new phase he first observed in the Shergotty meteorite, and that he named in honor of Mervyn Herbert Nevil Story-Maskelyne [1823–1911]. The Natural History Museum in Vienna owns in its collections the original thin sections of the Shergotty meteorite in which G. Tschermak first described maskelynite. They are altogether 8 covered thin sections with inventory numbers from A1010 to A1017. In one of them (A1010) the same grains as depicted in figures 1 and 2 of his treatise [1] were found. However, we were so far not able to find the grain depicted therein in figure 3. In [1], maskelynite is described as a crystalline phase forming "colorless, glassy grains with conchoidal fracture(s)". "Maskelynite crystals are cubic and their form is a distorted cube". Maskelynite composition "does not fit to any known cubic mineral but is similar to the composition of labradorite". In a later paper [2], G. Tschermak revised his original description by noting that "as maskelynite often exhibits more or less rectangular outlines, I assumed that it crystallized in the cubic system", and concluded that "due to the fact that no traces of cleavage can be recognized and as in previously stated observations one can find examples for the transformation of a birefrigent component into an isotropic one, for me it now appears more and more likely that maskelynite was formed from labradorite via melting".

Recommendations: In the last decades the word maskelynite has been used to describe both, glasses formed by solid-state transformation (i.e., diaplectic glass) [3,4] and by quenching from a melt [5,6]. These two phases have very distinct genetic origins, and, thus, the word "maskelynite" cannot, and should not, be used for both types of glasses or interchangeably. According to the original definition by G. Tschermak, maskelynite is formed by melting [2], thus, we recommend to use proper terminology.

References: [1] Tschermak G. 1872. *Sitzber. Akad. Wiss. Wien, Math.-Naturwiss. Kl. Abt. I* 65:122–146. [2] Tschermak G. 1883. *Sitzber. Akad. Wiss. Wien, Math.-Naturwiss. Kl. Abt. I* 88:347–371. [3] Stöffler D. et al. 1986. *GCA* 50:889–903. [4] Fritz J. et al. 2005. *Antarct. Meteorite Res.* 18:96–116. [5] Chen M. and El Goresy A. 2000. *EPSL* 179:489–502. [6] El Goresy A. et al. 2013. *GCA* 101:233–262.