NALBACH (SAARLAND, GERMANY) AND WABAR (SAUDI ARABIA) GLASS – TWO OF A KIND?

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Introduction: The recent discovery of enigmatic glasses near Nalbach (Saarland, Germany) by one of the authors (W.M.) [1] poses the major question whether these glasses were produced by an impact event [2]. Although no shocked quartz grains have been detected so far, the Nalbach glass shows a number of features typical for terrestrial impact glasses, such as those found at, e.g., Monturaqui (Chile), Henbury (Australia), or the Libyan Desert Glass. In particular, the Nalbach glass exhibits a striking similarity to the Wabar (Saudi Arabia) impact glass [3;4].

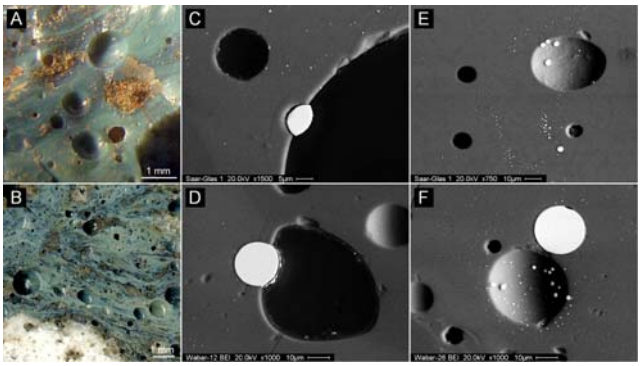

Fig. 1: Nalbach and Wabar glass. **A:** Uncut specimen, Nalbach (from [1]). **B:** Polished section, Wabar. **C:** Backscattered electron image (BEI) of vesicular glassy melt matrix (gray) and flattened Fe-Ni sphere (white) at the melt/vesicle interface, Nalbach. **D:** Similar to C but from Wabar (BEI). **E:** Fe-Ni microspheres adherent to the inner surface of a vesicle, Nalbach (BEI). **F:** Similar to E, with larger Fe-Ni sphere, Wabar (BEI).

Nalbach and Wabar Glass – Comparison and Interpretation: The Nalbach and Wabar glasses both exhibit bluish to greenish varieties with a fluidal and schlieren-rich, vesicular, SiO_2-rich glassy groundmass (Fig. 1A-B). Both glass types contain abundant ballen α-cristobalite as a high-temperature (>1000°C) modification of silica [2]. Microscopic Fe-Ni spheres considered as droplets of iron meteoritic matter [2-4] are distributed in a very similar way in both glass types. The Nalbach and Wabar glasses show microstructural evidence for a dynamic liquid interaction between the silicatic melt, incorporated Fe-Ni droplets, and gas (vesicles), which is expressed by the occurrence of flattened Fe-Ni spheres (Fig. 1C-D) and microspheres adherent to the inner surfaces of vesicles (Fig. 1E-F). Our preliminary observations are consistent with the formation of both glasses as an 'emulsion' of an iron meteoritic melt in a hot, degassing target melt [4] and, like for Wabar, favor an impact origin for the Nalbach glass. Further analyses are ongoing.

References: [1] Müller W. 2011. *Prims: a possible Holocene meteorite impact in the Saarland region, West Germany.* Scribd document no. 51477759 (available online). [2] Buchner et al. 2011. This volume. [3] Hörz F. et al. 1989. Proc. 19th LPSC, p. 697-709. [4] Schmieder M. and Buchner E. 2009. Abstract volume, 1st AICAC Meeting, Amman, Jordan, CD-ROM.