

BALLEN QUARTZ IN IMPACT GLASS FROM THE BOSUMTWI IMPACT CRATER, GHANA.

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Introduction: The 1.07 Ma old Bosumtwi impact crater in Ghana is a well-preserved complex impact crater [1]. Suevites occur outside the crater rim, to the north and southwest of the crater [2]. Recent work on breccia samples from the ICDP boreholes LB-O7A and LB-O8A, which were drilled into the deep crater moat and the central uplift, respectively, confirmed the presence of glass and melt particles [3-4]. Here, we study the presence of ballen quartz in suevitic breccia at Bosumtwi. Ballen quartz (Fig. 1) has been observed in impact glass from many other impact structures, but its formation mechanism [5-6] is still unresolved.

Results: Diaplectic quartz glass is abundant in suevite deposits outside the northern crater rim [2]. Ballen quartz is however restricted to samples from drill hole BH1 [2]. In contrast, diaplectic quartz glass is rare, and ballen quartz is absent, in samples from drillcores LB-O7A and LB-O8A. Ballen in the few grains observed display varied shapes (circular to oval or crescent), sizes (8 to 214 μm , with an average of 50 μm ; 471 ballen measured in 14 quartz grains within suevite samples BH1-0790 and BH1-0800) and distribution density from grain to grain.

Discussion: This study shows that: i) ballen quartz is irregularly distributed in the breccia deposits at the Bosumtwi crater, and ii) ballen size and shape vary from grain to grain. The heterogeneous distribution and sizes of the ballen must have implications regarding ballen quartz formation and preservation.

References: [1] Koeberl, C. and Reimold, W. U. 2005. *Jb. Geol. B.-A. Austria* 145:31-70. [2] Boamah D. and Koeberl C. 2003. *Meteoritics & Planetary Science*, 38:1137-1159. [3] Coney, L. et al. 2006. Abstract #1279. 37th Lunar & Planetary Science Conference. [4] Ferrière, L. et al. 2006. Abstract #1845. 37th Lunar & Planetary Science Conference. [5] Carstens, H. 1975. *Contributions to Mineralogy and Petrology* 50:145-155. [6] Bischoff, A. and Stöffler, D. 1984. *Journal of Geophysical Research Supplement* 89:645-656.

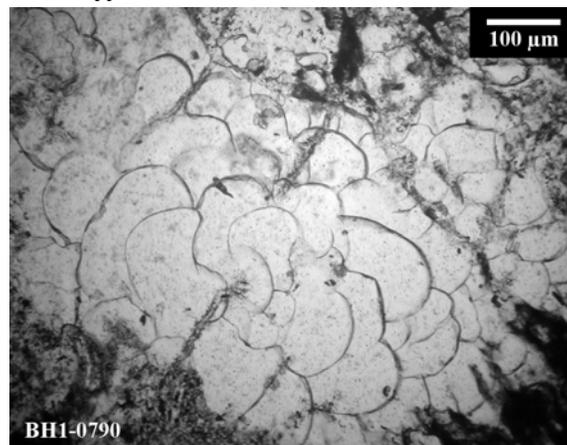


Fig. 1: Thin section microphotograph (plane-polarized light) of ballen quartz in suevite from Bosumtwi impact crater (sample BH1-0790).