

**THE SUBO 18 (ENKINGEN) DRILL CORE FROM THE RIES CRATER, SOUTHERN GERMANY**

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The Ries Crater impact breccia deposits are accessible through a series of boreholes. In 2008, a further hole was cored near the village of Enkingen (SE Ries), accessing the crater breccias at the inner slope of the crystalline ring. The 100 m drill core comprises 21.2 m crater sediment above suevite to -86.24 m and a rather massive impact melt rock to end-of-hole (Pohl et al., 2010).

Downhole, the abundance and size of melt particles, as well as the maximum size of crystalline clasts, all increase. Only the lowermost section contains a notable but very small component of sedimentary clasts. The suevite package is characterized by significant variation in melt particle content, with local accumulations of densely packed and frequently subhorizontally aligned melt particles. A complete transition from melt-poor to melt-rich and melt-agglomeratic impact breccia was recovered.

A detailed study by ASEM of the submicroscopic groundmass in suevite samples showed that it is largely composed of secondary phyllosilicate and carbonate, besides micro-clasts and rare recognizable melt micro-particles. Textural evidence from clasts in melt-poor, melt-rich, and melt-dominated sections demonstrates that thermal effects are limited in the former, enhanced in the second, and dominant in the latter type of breccia. This may indicate that typical melt-poor suevite originally had a groundmass dominated by clastic material (besides significant porosity), whereas the other two types contained more and more melt both in the clast content and in the fine-grained to submicroscopic groundmass components. Modal analyses show that the target volume excavated and mixed into these impact breccias was dominated by crystalline basement-derived material, with only a minor sedimentary component. The varied suevite types in the Enkingen drill core are all rather similar also with regard to dominant shock degree of the micro-clast fraction. The challenge now is to find a comprehensive model that would explain these data in terms of genesis of different varieties and occurrences of suevite.

Major and trace element, including PGE, analysis by XRF, INAA and ICP-MS was carried out. Some samples are distinctly enriched in PGE, which has implications for Ries projectile identification.

**Reference:** Pohl, J. et al. (2010) GSA Special Paper 465, in press.