A POSSIBLE NEW IMPACT SITE NEAR NALBACH (SAARLAND, GERMANY)
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Introduction: The two impact craters Nördlinger Ries and
the Steinheim Basin (S Germany) represent the only confirmed
impact structures in Germany. Although a great number of possi-
ble impact structures in many parts of Germany were proposed in
the past, none of them was confirmed. We suggest a new possible
impact site in the German state of the Saarland (W Germany) on
the base of possible impact glasses and potential traces of an iron
meteorite in melt particles that are distributed within an area of
some square kilometers in the surroundings of the village of
Nalbach. The possible impact melt particles were recently
discovered by one of the authors (W. Müller).

Petrographic and geochemical analyses: Externally, the
melt particles exhibit a bluish to black color and are often aero-
dynamically deformed (tear- or spindle-shaped). The particles
contain a homogenous, schlieren- and vesicle-textured glassy
melt groundmass; roundish sandstone particles are incorporated
into the melt matrix. Geochemically, the melt matrix yielded a
Si-, Al-, and K-rich mixed silicatic composition. We have not
detected shocked quartz grains with PDFs so far, however, some
of the melt particles show conspicuous ballen-textured α-
cristobalite (Fig. 1A) and contain spherule-shaped iron droplets
(Fig. 1B). Preliminary geochemical SEM-EDX analyses showed
that the Fe droplets commonly contain higher amounts of Ni (up
to ~10 wt%), together with variable amounts of S, P, Ni, and Co.
We also detected metallic fragments that exhibit a composition
close to taenite, troilite, and schreibersite as known from meteor-
ites. Further analyses are in progress.

Conclusions: Ballen α-cristobalite, detected in some melt
particles, was recently suggested as an impact-diagnostic feature
[1]. Externally and internally, the Nalbach melt particles closely
resemble impact glasses from Wabar [2,3] and other terrestrial
impact sites by their color, texture, composition, and content of
metallic particles. The metallic droplets and fragments in the
melt particles may be interpreted as the molten and fragmented
remnants of an iron meteorite. The melt particles are distributed
over some km² that could represent an (eroded or covered)
impact crater or an area affected by a larger meteoritic airburst.

Fig. 1: Nalbach glass. A: Ballen α-cristobalite and B: Fe-Ni droplets
(white) in a vesicular glassy melt matrix (backscattered electron images).

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