

Mineralogy of the Two Recent Meteorite Falls in Germany – Elmshorn (H3-6_{an}) and Ribbeck (Aubrite).

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Elmshorn fell April 25, 2023, about 30 km northwest of the city of Hamburg (Germany) and 21 pieces were recovered shortly after the fall totaling a mass of 4277 g [1]. Less than one year later the meteorite of Ribbeck fell January 21, 2024 in the Havelland, west of Berlin. Within a short period of time 202 pieces were recovered totaling about 1.8 kg [2].

Elmshorn is an anomalous H3-6 chondrite breccia. Randomly obtained olivine compositions indicate the presence of an impact-produced mixture of H and H/L (or L) chondrite lithologies of types 3-6, as well as shock-darkened and melt fragments.

Ribbeck is a feldspar-rich aubrite and shocked to S3 (U-S3). It also shows initial effects of parent body aqueous alteration as well as terrestrial weathering (W0/1) already six days after fall. Aubrites belong to the rare types of achondritic meteorites. Ribbeck is only the twelfth recorded fall of an aubrite in history and of special interest for aqueous alteration on the aubrite parent body.

[1] Bischoff A. et al. (2024a) MAPS 59, 2321–2356.

[2] Bischoff A. et al. (2024b) MAPS 59, 2660–2694.