TELLURIC IRON FROM WABAR IMPACTITE.

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Introduction: The Wabar craters were among the earliest rekocnized meteorite impact structures on Earth[1]. The craters formed as the result of the fall of an iron meteorite classified as Type IIIAB medium octahedrite and containing approximately 8 %wt of Ni. In the Wabar impactites the metallic phase dominantly is present as spherules between 5 and 100 µm in diameter. According to recent work [2] the nickel content of the spherules can be relative higher than for the average for the meteorite (up to 60 %wt) testifying to an all meteoritic origin. We report here on the finding of particles of pure iron in impactites from Wabar crater.

Results and Discussion: A small piece of a vesicular, white speckled, dark green impactite from Wabar was lightly crushed by hand, and subjected to magnetic separation using a ferrite hand magnet. Similarly, a magnetic fraction was prepared from the local, loose sand drift. Individual, sand sized, magnetic grains were mounted on a standard SEM holder using carbon tape and subjected to SEM observation and EDS analysis. Figure 1 shows the morphology of a particle of pure iron. In contrast to the solid, spherical morphology of FeNi spherules the iron particles show deep groves seemingly formed by folding of plates that locally exhibit different smoothness and cavities. Trace amounts of Ti and V can both be detected in the iron. These elements are also detected in analyses of magnetic titanomagnetite isolated from the local drift sand, suggesting that the telluric iron form by a series of processes overall leading to the reduction of oxide during the impact.

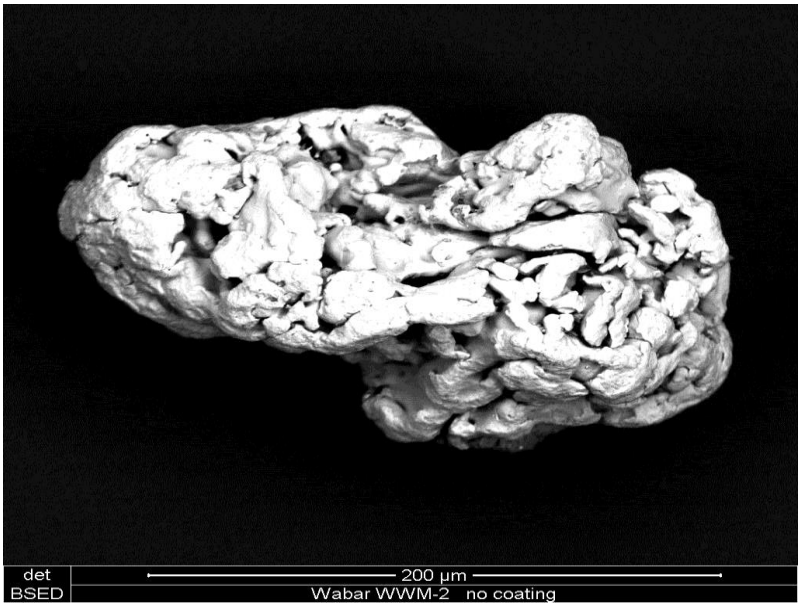

Figure 1. Telluric iron particle recovered from Wabar impactite.

References: [1] Spencer L.J. (1933) *Mineral Mag 23:387-404*. [2] Hamann C. et al (2013) *Geochemica et Cosmochemica Acta* 121:291-310.