

Asteroid Vesta and the source of 22-Ma clan HED meteorites

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Most meteorites fall from 0.1-10 m sized meteoroids that were created during a collision event in the asteroid belt. That collision disrupted a larger 100-m to 1-km sized meteoroid or created an about 10-km sized impact crater on one of the larger asteroids. We will discuss the arguments that suggest that the Antonia crater on asteroid 4 Vesta may well be the source of 22 Ma old Howardite-Eucrite-Diogenite meteorites. Our study of the Saricicek howardite fall in Turkey in 2015 provided an impact orbit and a particle size distribution from the meteoroid's disruption, which were used to constrain the source location and the size distribution of ejected meteoroids from the collision event. The dynamical evolution following the impact was investigated. Antonia was identified as the likely source crater based on the dating of Vesta craters by Dawn mission team members and the cosmic ray exposure age and helium retention age of the Saricicek meteorites.