## 2.2.6 Microcraters Produced by Oblique Incidence of Projectiles

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Using a Van de Graaff dust accelerator an experimental program has been carried out in order to study crater parameters as a function of projectile incidence angle. Iron particles were shot into quartz glass targets. The angle of incidence which is the angle between target normal and the impact direction of the projectile has been varied from $0^{o}$ to $70^{o}$ in steps of $10^{o}$. Projectile masses ranged from $10^{-11}$ to $10^{-13}$g with velocities between 3 and 20 km/sec and projectile masses at $10^{-2}$g with 4 km/sec impact velocity using a light gas gun at the Ernst-Mach-Institut, Freiburg i.Br. The so called circularity index which is the ratio of the crater area to the area of the smallest circle around the crater is a measure of the asymmetry of a crater. The circularity index decreases linearly with increasing angle of incidence. Also a small increase of the circularity index with increasing projectile velocity has been found i.e. the craters have a rounder shape with increasing velocity at the same angle. The circularity index appears to be independent from the projectile mass in the mass range from $10^{-11}$ to $10^{-2}$g for stainless steel targets.

Over the entire range of angles of incidence (m,v constant) the ratio of the width of the crater to the diameter of the projectile (D/d) is constant. From this ratio one can infer the diameter of the projectile.

Craters on stainless steel targets were used for comparing simulated craters with those on exposure areas on board of satellites. Craters on moon-like targets (feldspar) were used for comparing simulated craters with those on silicate lunar material.

The small spherules inside the craters were analysed by means of energy dispersive X-ray spectrometry. They consist mostly of projectile material.

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