

Figure 26. MI mosaic of cobble Perseverance, taken on sol 554 with illumination from top. Cobble has mottled appearance, with darker and lighter irregular areas (black arrows). Pits visible in shadowed region (white arrows).

origin of these cobbles, including an overlying stratum that was subsequently eroded away, impact-transported samples of deeper strata, locally derived impact melts, and resistant material such as rinds or fracture fillings [Jolliff *et al.*, 2006].

4.1.7.1. Arkansas

[54] Arkansas is a cobble approximately 9.45 cm long, sitting on a soil composed of large, rounded grains of similar reflectance that are embedded in a finer-grained matrix. Individual grains comprising the cobble cannot be resolved, and no crystal forms or cavities are evident, so cobble lithology is not diagnostic.

[55] The surface texture of this target is heterogeneous, with smooth areas bisected by shallow striations and giving way to sharp-edged pits, as seen in Figure 25. The pits may indicate alteration by ballistic or eolian impact. However, any detritus derived from these pits is not locally evident, arguing against *in situ* alteration. Because the cobble is in shadow, it is difficult to determine the overall luster.

[56] The sphericity of this cobble is approximately 0.79, a relatively high value, and elongation (length/width) is approximately 0.72. Because a portion of the cobble is not imaged, these values are necessarily minimum estimates. Quantitative roundness (which depends on the sharpness of clast corners) could not be determined definitively but can be estimated as angular to subangular, which indicates a quantitative roundness between 0.17 and 0.35 [Powers, 1953]. There is no evidence that breakage occurs along grain or crystal boundaries or fractures. Peeling along surfaces of stratification may be indicated by scalloping along the cobble edges (Figure 25). Individual grains or crystals comprising the cobble cannot be resolved, so neither grain fracture, sorting, nor preferred orientation of grains/crystals can be measured.

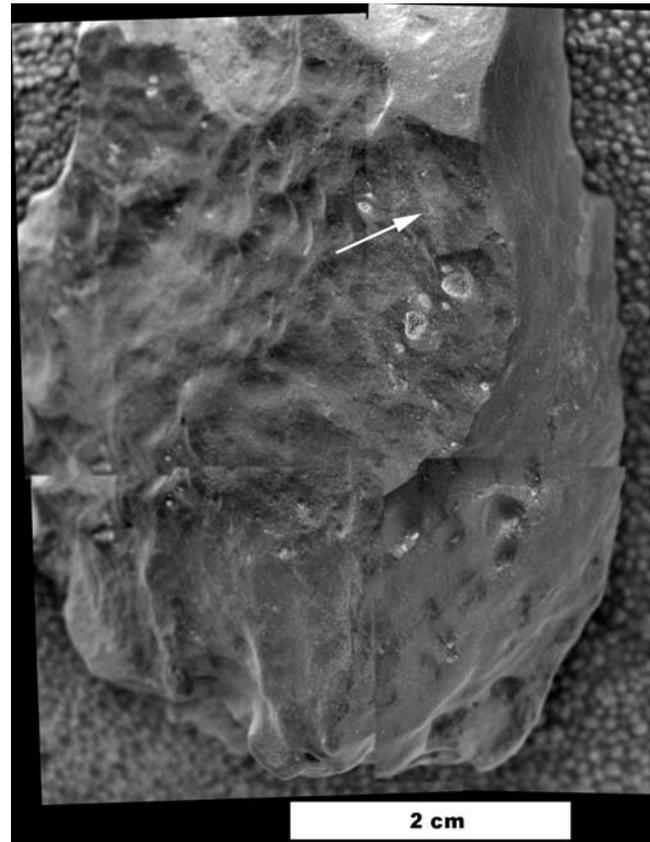


Figure 27. MI mosaic of cobble Antistasi, taken on sol 641 when fully shadowed. Cobble reflectance is heterogeneous, with irregular lighter areas (arrow) embedded in a darker mass.