

Fig. 5. *Top*: FESEM/low angle backscatter electron image of an intriguing feature, ~ 15 x 25 μm, in sample 40598.17. This feature may be interpreted as a low velocity impact feature or corrosion behavior of a BMG. Circles designate regions of interest (ROIs) analyzed using energy dispersive X-ray spectrometry (EDX; 15 kV/sample uncoated). *Bottom*: Four EDX spectra of ROIs located within the feature. They are color coordinated with the circles in the upper view. The BMG is composed of Zr, Cu, Ni, Al & Nb. Additional elements detected in the feature include C, O, Si, Mn & F resulting from a possible impact event or corrosion behavior of the BMG during the reentry crash.

High magnification optical microscopy revealed semi-circular, μm-size features subsequent to characterization using field emission scanning electron microscopy (FESEM) on samples 40598.13, 40598.16, 40598.17, and 40598.35. No features were interpreted as possible craters with one exception in 40598.17 (Fig. 5). This feature *may be* interpreted as a possible low velocity impact crater or is consistent with corrosion behavior of the BMG substrate exposed to the Utah soil. The presence of elements within the void not associated with the background/BMG matrix pose an intriguing question as to the origin of this feature. Unfortunately the BMG surface has many voids and scratches likely acquired during reentry and crash landing.

Initial work has begun in house to subdivide the BMG. Roger Harrington was able to subdivide sample 40598.9 into 3 pieces by hand-sawing with a diamond

blade. Subdivision plan and final sample images are shown in Figs. 6 & 7. The partial devitrification of the BMG is visible in most optical images of the subsamples and is also evident in FESEM images.

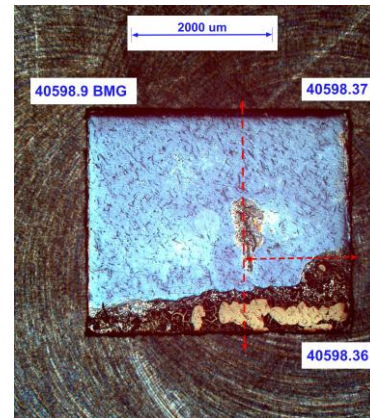


Fig. 6. Red dash line shows the cutting path followed to subdivide sample 40598.9

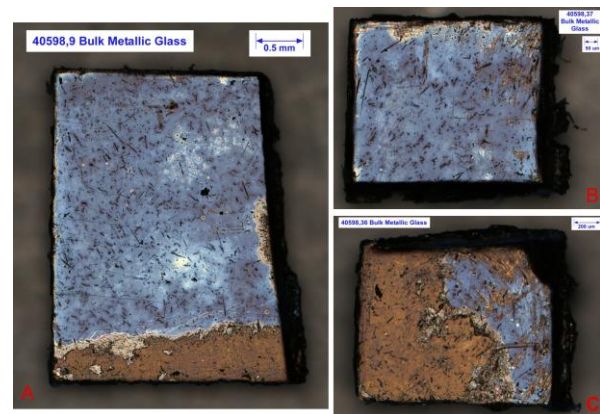


Fig. 7. Sample image taken after subdivision with a diamond blade. A) Sample 40598.9 B) Sample 40598.37 C) Sample 40598.36

References:

[1] Jurewicz A. J. G. *et al.*(2003) *Space Sci. Rev.* 105, 535-560 [2]Grimberg A. (2008) *Geochim. Cosmochim. Acta.* 72, 626-645