NOBLE GAS COMPOSITION OF TEKTITES FROM BEDIAS, TEXAS. R. L. Palma, K. D. Ocker, and M. N. Rao, Dept. of Physics, Sam Houston State University, Huntsville, TX. 77341.

We have determined the composition of noble gases in the Bediasite tektites to examine whether they belong to the splash form tektite group or the impact glass group.

Tektites and impact glasses seem to have been formed due to meteorite impacts on terrestrial surface rocks [1, 2]. We have measured the elemental and isotopic composition of all noble gases in a few dark brown silica rich tektite glasses collected from the strewn field in Bedias, Texas. These samples seem to belong to splash form tektites. The purpose of this study is to distinguish between the impact glasses and tektites based on noble gas data. Heavy noble gas measurements on these Bediasites have not existed before. Noble gas studies may provide clues about the conditions of their formation.

As the noble gas contents in these tektites are generally low [3, 4, 5], we have chosen fairly large sample sizes (up to about 3 grams) for the proposed study. Noble gas measurements were carried out by standard procedures using a Nuclide mass spectrometer at Texas A&M University. Gas extractions were carried out at 1600 °C for 30 minutes. Note that the blank corrections for neon are only a few percent while for all other gases, ^{4}He, ^{36}Ar, ^{84}Kr and ^{132}Xe, the blank corrections range from 20 to 50%.

The ^{20}Ne concentration in Bediasite-2 is 46 x 10^{-8} cc STP/g. This value seems to be higher than those reported by Matsubara *et al.* (1993) for other splash-form tektites. However, this value belongs to the broad range ($\approx 10^{-7}$ cc STP/g) to which other impact glasses and Munong-Nong tektites belong. In the study of the Bediasites, we found large Ne enrichments (of the order of ≈1000) which are characteristically observed in other tektites [3, 4, 5, 6]. This may be due to the high diffusion of Ne in these glasses at the time of solidification [4]. The isotopic composition of neon in the Bediasites is very similar to air and does not show any anomalies. These large neon enrichments seem to be common to both tektites and impact glasses and does not apear to provide criteria to distinguish one from the other.

Even though He is highly diffusive, a significant concentration of ^{4}He, about 4 to 6 x 10^{-8} cc ^{4}He/g, was observed in the Bediasites measured in this study. It is not clear whether originally more ^{4}He was trapped in these glasses at the time of solidification and was later lost gradually from theses glasses because of diffusion. Note that the range of Ne values in these tektites is much tighter than the range of ^{4}He in

these samples [6]. As pointed out by Matsubara *et al.* [6], He and Ne do not show any characteristic pattern to distinguish between splash form tektites and impact glasses.

We also examined the concentrations and isotopic compositions of the heavy noble gases in the Bediasites. The Ar content of the Bediasites studied here is about 5 x 10^{-10} cc ^{36}Ar/g. Note that the blank correction in these samples is about 25%. The ^{36}Ar content observed in the Bediasites seems to be in between that observed for splash form tektites and impact glasses [6]. In one sample, we observed a larger concentration of ^{40}Ar than that accounted for by the air ratio, calculated using ^{36}Ar. This anomalous increase in ^{40}Ar may be due to the increased content of the radiogenic ^{40}Ar in the pores of the host rock at the time of impact formation of this sample.

The Kr abundance in the Bediasites is about 5 x 10^{-11} cc ^{84}Kr/g sample, and the ^{132}Xe concentration is 7.6 x 10^{-12} cc STP/g. These Kr and Xe concentrations place the Bediasites between impact glasses and splash form tektites.

One explanation for the above observations is that these Bediasites may not belong to either impact glasses or splash form tektites and probably constitute an independent group of impact objects. Alternatively, the boundary between tektites and impact glasses is probably continuous, as pointed out by Matsuda *et al.* (1993) and the Bediasites belong to an intermediate group. More detailed analyses of the Bediasites are in progress.

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References: [1] Glass B. P. (1990) *Tectonophysics,* **171**, 393-404. [2] Koeberl C. (1990) *Tectonophysics,* **171**, 405-422. [3] Hennecke E. W., Manuel O. K and Sabu D. D. (1975) JG, **80**, 2931-2934. [4] Matsubara K. and Matsuda J. (1991) *Meteoritics,* **26**, 217-220. [5] Matsuda J., Matsubara K. and Koeberl C. (1993) *Meteoritics,* **28**, 586-589. [6] Matsubara K., Matsuda J. and Koeberl C. (1993) *Meteoritics* (abstract), **28**, 392.