GEOCHEMICAL STUDY OF MICROTEKTITES, BEDIASITES, AND GEORGIAITES FROM THE UPPER EOCENE NORTH AMERICAN TEKTITE STREWN FIELD. H. Huber[1], C. Koeberl[1], and B. P. Glass[2], [1]Institute of Geochemistry, University of Vienna, Althanstrasse 14, A-1090 Vienna, Austria, [2]Department of Geology, University of Delaware, Newark DE 19716, USA.

Microtektites from the 35 Ma upper Eocene North American tektite strewn field have recently been analyzed for major and trace element composition (in particular, the rare earth element (REE) abundances), using the electron microprobe and neutron activation analysis (see also [1]). The microtektites were recovered from drill cores from the northwest Atlantic off New Jersey, the Caribbean Sea, and the Gulf of Mexico. In our study, we individually analyzed more than 100 microtektites for trace element contents. Typical sample masses were 5–50 µg. Previously, only few trace element data for bediasites and georgiaites were available. To improve the data base, and to allow detailed comparison with the microtektite data, we analyzed nine samples of bediasites from Biddings, Texas, and two tektite fragments from Dodge County, Georgia.

The results were compared with previously determined REE abundances [2-4] for the calculation of "average georgiaite" and "average bediasite" compositions. These data were compared with trace element contents of microtektites (excluding the so-called microkrystites – clinopyroxene-bearing spherules, that are found in at least one layer under the microtektite layer in every deep sea drill site) from the RC9-58 drillcore (ten samples), as well as various microtektites and microtektite fragments from DSDP site 162, 4/2, 135-7 cm and 4/4, 76-8 cm, DSDP site 167, 28/1, 17-8 cm and 33-35 cm, DSDP site 292, 38/2, 63-4 cm and DSDP site 149, 31/1, 5 cm, all from the North American strewn field.

The chondrite-normalized REE patterns (see Fig. 1) of the microtektites are similar to both average bediasite and georgiaite. Nevertheless, the DSDP 162 tektites show a general enrichment in REE contents, whereas the samples from DSDP site 149 are generally REE-depleted. Cr, Co and Rb abundances of the microtektites show large variations. Highly increased abundances of Cr and Co were found in samples from DSDP 149 and 162, whereas the highest Rb concentrations have been determined in microtektites from RC9-58. The over-all trace element distribution of the microtektites analyzed so far is similar to that of an average georgiaite. Compared to bediasites, average microtektites are enriched in Cr and Co, have slight enrichments of Sc and the REE, but are depleted in As and Rb. Nevertheless, the average REE abundances of all microtektites seem to have the same distribution pattern as georgiaites. Bediasites are generally slightly enriched in REE compared to georgiaites, with enrichments of Sc, Cr, and Co as well.

Thus, bediasites and georgiaites show clear compositional similarities with microtektites from various deep sea drill cores within the North American tektite strewn field, confirming that they were derived from a common source rock.

References: [1] Glass B. P. and Koeberl C. (1998) *MAPS, 34,* 197–208. [2] Haskin L.A. et al. (1982) *LPS XXXIII,* 302–303. [3] Glass B. P. et al. (1995) *GCA, 59,* 4071–4082. [4] Glass B. P. et al. (1998) *MAPS, 33,* 229–241.

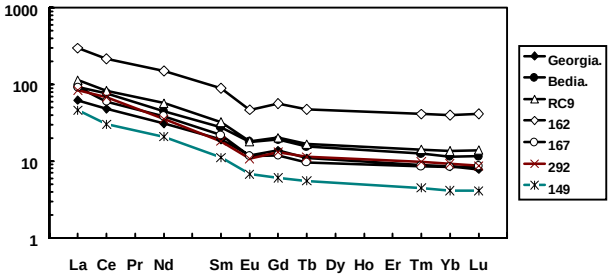

Fig. 1: Rare earth element patterns of average georgiaites, average bediasites and microtektites from various deep sea drill core sediments from the North American tektite strewn field.