

TRACE ELEMENT AND RADIOGENIC ISOTOPE CHARACTERISTICS AND FISSION TRACK DATING OF HIGH-SILICA AND HIGH-CA TEKTITE GLASSES FROM THE CRETACEOUS-TERTIARY BOUNDARY AT BELOC, HAITI; Ph. Bonte¹, L. Turpin², H. Sigurdsson¹, J. Carpena¹, and C. Jehanno¹, ¹Centre des Faibles Radioactivites, CNRS/CEA, 91198 Gif-sur-Yvette, France; ²Departement de Chimie Appliquee et d'Etudes Analytiques CEN, 92265 Fontenay-aux-Roses, France.

The tektite glasses found at the Cretaceous-Tertiary boundary at Beloc, Haiti are dominantly of two types: a high-silica black glass which is most common and with chemical composition consistent with fusion of continental crust or broadly andesitic composition, and rare high-Ca yellow glass, whose composition can be attributed to fusion of marl sediment, with carbon dioxide volatile loss to the atmosphere. We report on the rare earth and other trace element composition of twenty particles of the two glass types, and present ⁸⁷Sr/⁸⁶Sr analyses, which provide added constraints on the source region of the bolide impact. The trace element distribution of the black Beloc glasses is similar to upper continental crust, with high content of incompatible elements and strongly LREE-enriched compared to chondrite (La/Yb 7.7). However, the Beloc glasses have unusually high Th/U ratio (5.8) compared to andesites, and are further distinguished from andesites by the very high K/Cs ratio (13500). This Cs-depletion in the glasses relative to continental crust and volcanic arc rocks may be an indication of Cs-loss during vaporization fractionation. The Beloc glasses have rather low Cr and Ni concentrations. The Ti/Al ratio in the KT boundary claystone in western U.S.A. (0.047±0.005 1s) is indistinguishable from that of Beloc glasses (0.050±0.005 1s). The REE patterns and trace element distribution in Beloc glass is very similar to that of the KT boundary claystone, but the claystone is depleted in all REE by order of magnitude compared to the glasses.

Fossil fission tracks have been observed in the black glass, with a track density of the order of 10,000/cm². The state of freshness of the glass and the rather homogeneous distribution of uranium are favorable for dating purposes, and fission track dating is in progress.