The chemical composition of Australasian tektites collected from Dalat, Vietnam

Rabeya Akhter, Naoki Shirai and Mitsuru Ebihara

(Department of Chemistry, Tokyo Metropolitan University)

Introduction: Tektites were originated from the melted continental crust during the hyper velocity impact of meteorite on the earth and it is assumed tektites may preserve some information about impact. There are few research works which identified meteoritic components and types of projectile regarding tektites. In this study, we have determined the elemental abundances of indochinite tektites of the Australasian strewn field, specially focusing on the siderophile elemental compositions to verify the chemical characteristic of these tektites.

Experimental: We have analyzed 13 splash form tektites collected from Dalat, Vietnam. Instrumental neutron activation analysis, inductively coupled plasma-atomic emission spectroscopy and inductively coupled plasma-mass spectrometry were used to determine the elemental abundances in the tektites.

Results and Discussion: Our results for major and trace elements abundances in Dalat tektites are in good agreement with literature data. Abundances of major elements presented by Na, Mg, Al, K, Ca, and Fe are quite consistent among different sampling locations of Vietnam, which indicates that source materials have very close resemblance for major elements. CI chondrite- normalized REE abundance pattern of Dalat tektites is very similar to that for the post Archean Australasian shale (PAAS) which is considered as the parent material for Australasian tektites. Our data for the trace elemental abundances of Dalat tektites and literature value for tektites from different localities in Vietnam show - Dalat tektites have high contents of siderophile elements specially Co and Ni compared with PAAS. The enrichment of these siderophile elements may be due to the presence of either meteoritic component or ultramafic materials. The Co-Ni-Cr interrelations of our samples and also literature data for Dalat tektites are appreciably positive and these pattern show close similarity to the mixing calculations of both CI chondrite and ultramafic rock. [Fig: 1]. But this quantity (~7-15%) of ultramafic rock to be present in the parent material is not geologically feasible. So a probability of the presence of meteoritic component seems to be higher, but we need to perform more analyses specially for highly siderophile elements like platinum group elements to ensure this.

Fig1: Co vs. Ni and Cr abundances for Dalat tektites from this work and literature.