

Geochemical variability of Ivory Coast tektites

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The Ivory Coast tektites strew-field, or ivorites field, is related to the meteorite impact (1.07 million years) of Bosumtwi in Ghana. It remained underexplored since its discovery in 1935 by Lacroix [1]. Geochemical analyses that have been carried out on a few dozen samples only and have revealed a particularly homogeneous material [2, 3].

Several field explorations were achieved over the 2020 – 2022 period of time and have allowed the discovery of more than a hundred of new samples. The extension of the Ivory Coast tektite field has been updated and extend now beyond its historical limits. A semi-quantitative geochemical analysis of these 172 new tektite samples was performed using a portable X-ray fluorescence spectrometer. In addition to the tektites found in the field, 285 tektites made available by the SODEMI museum were also analyzed on this occasion. The results obtained (Si, Al, Fe, Mn, Ca, K, Ti) are comparable to the results of previous work on Ivory Coast tektites and clearly distinct from those of tektites from other fields in the world. However, these analyses reveal a more variable geochemical composition than the apparent homogeneity deduced from a small number of samples. There are also some anomalous samples with chemical values that differ notably from the vast majority of samples.

These new results reveal the undocumented geochemical variability within the Ivory Coast tektites. We will therefore explore the possible factors controlling this variability, the first parameter being the locations of the finds. We hope that further work on this compositional variability will shed new light on the formation process of the tektites and on the diversity of the source material that form them within the exposed lithologies and surface material (soil, regolith) at the Bosumtwi impact crater.

[1] Lacroix, A. (1935). «Les tectites de l'Indochine et de ses abords et celles de la Cote d'Ivoire». Arch. Mus., 60 serie, 12: 151–70.

[2] Koeberl, C. (1990). «The geochemistry of tektites: an overview.» Tectonophysics 171: 405–22.

[3] Koeberl, C., et al., (1997). «Geochemistry and Age of Ivory Coast Tektites and Microtektites.» Geochemical and Cosmo chemical Acta 61: 1745–72.