MAGNETIC PROPERTIES OF TEKTITES AND RELATED GLASSES : DISCRIMINATING AMONG DIFFERENT FIELDS AND IMPACTOR COMPONENT.

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Previous studies of magnetic properties of australasites and moldavites [1] have shown that magnetic susceptibility is low and essentially paramagnetic, thus being a good proxy for total iron amount. Average susceptibility for moldavites, australasites and Belize tektites are quite distinct, in line with the known Fe amounts : 35±12, 83±8 and 120±10 nm^3/kg, respectively [1-3].

We have extended the database by studying ivoirites, bediasites, Darwin glass, Lybian desert glass Wabar glass as well as the new tektite-like field from Atacama [4]. LDG and Darwin glasses are less magnetic than moldavites (and even diamagnetic for yellow LDG). Preliminary results on bediasites (from NHM London) and ivoirites (from NHM London, Paris and Carion collection) yeld average values of 64±16 and 103±12 nm^3/kg. Although the ranges overlap, ivoirites and bediasites can thus be discriminated non destructively from australasites, if provenance is questionned.

The Atacama tektites (over 3000 samples measured) show a mean at 188±233 nm^3/kg, with a very large range : from 50 to 20 000. We will show here and in [4] that this range is partly due to a range in total Fe but mainly to a significative amount of ferrimagnetic Fe-Ni oxydes in the most magnetic samples, signing a strong contamination by an iron impactor. The Wabar glass we measured yield the same characteristics. These results show that magnetic susceptibility screening can allow to identify the rare tektites showing total iron or iron oxyde enrichment, thus helping to increase the possibility to find impactor enriched samples. Indeed, the green « smoky » LDG (where impactor traces have been identified), show a significant ferrimagnetic component.

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References: [1] Werner T., Borradaile G.J., 1998. *PEPI* 108 :235-243. [2] Koeberl C. 1986. *AREPS* 14 :325-50. [3] Hoffmann V.H. et al. 2013. 44th Lunar & Planetary Science Conference. [4] Devouard B. et al. 2014. Met. Soc. Conference.