

## Report on ES-122

Using the micro-XANES station at BM23, Niobium (Nb) K-edge and tantalum (Ta) LIII-edge XANES spectra were obtained at the part-per-million concentration level in silicate glasses quenched from chondritic melts equilibrated at 5 GPa and under moderately to highly reducing conditions (IW-1, IW-4.5, IW-7.9). Standard materials have also been analyzed for Nb and Ta, and the data were used to construct the calibration curves of  $E_0$  (threshold energy) vs. valence. Under moderately reducing conditions our results are consistent with niobium and tantalum being mainly pentavalent in the silicate melts as also suggested by previous studies. We do not exclude that at IW-1, a small fraction of Nb and Ta could be reduced, leading to a mean formal valence slightly lower than five. At IW-4.5, Ta is mainly in the form  $Ta^{3+}$ , and at IW-7.9, Ta appears to be  $Ta^{1+}$ , whereas Nb is divalent ( $Nb^{2+}$ ). We have discussed the implications of our findings in the publication whose reference is given below.

This work is in press in the *American Mineralogist*

Cartier, C, Hammouda, T, Boyet, M, Testemale, D., Mathon, O, Moine, BN (2015) Evidence for  $Nb^{2+}$  and  $Ta^{3+}$  in silicate melts under highly reducing conditions: a XANES study, *Amer. Mineral.* 100, *in press*.