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**Evidence for an Earth-like Mo/W of the bulk-silicate Moon**

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We have carried out an experimental campaign aimed at investigating the partitioning behavior of Mo between silicates (pyroxenes, olivine and plagioclase) and silicate melt as a function of composition and oxygen fugacity. Redox conditions were imposed using CO-$CO_2$ gas mixtures that cover a broad range of $fO_2$, relevant to the Earth's and the Moon's mantles. Our results show that during partial melting in the mantle of the Earth, Mo is exclusively 6+ and highly incompatible. For the more reduced lunar mantle, however, Mo occurs exclusively as 4+ and is a compatible element. Our partitioning data were then used to carry out partial melting models of mixed ultramafic cumulate lunar mantle sources. Our modeled results show evidence that the Mo/W ratio of the bulk silicate Moon may be identical to that of the Earth's bulk silicate reservoirs, in agreement with the hypothesis that the Moon was mainly derived from the Earth's mantle. The effect of $fO_2$ on the crystal/silicate melt partitioning of Mo must be considered in any petrological model that attempts to reproduce natural processes, such as mantle partial melting, mass-dependent Mo isotope fractionation and core formation.

Cite abstract as:
Fonseca, R. O. C., Leitzke, F. P., Sprung, P., Münker, C., et al. (2017) Evidence for an Earth-like Mo/W of the bulk-silicate Moon. Paneth Kolloquium, Nördlingen (Germany), abstract URL: http://www.paneth.eu/PanethKolloquium/2017/0072.pdf (abstract #0072).