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Isotope dilution analysis of Se and Te in chondritic meteorites

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Selenium and Tellurium are moderately volatile with similar 50% condensation elements temperatures of 697 and 709 K respectively. While Se is expected to condense exclusively into sulfides, Te can also be incorporated in alloys [1] or forms tellurides [2]. Due to these characteristics highly precise Se and Te data may help to further constrain early solar system processes that led to depletion, enrichment (e. g. in EH3), and fractionation of moderately volatile elements. Thus, we determined precise Se and Te abundances for different groups of primitive chondrites by isotope dilution.

Within most of the carbonaceous chondrites we observed that Se and Te were depeleted to the same extend. In contrast, ordinary, enstatite, and Rumuruti chondrites have fractionated Se/Te with Te being more depleted relative to Se. The Se/Te fractionation in these chondrites might be caused by the preferential loss of host phases enriched in Te relative to Se.

[1] Lodders (2003) Astrophys. J. 591, 1220-1247.[2] Bischoff et al. (2011) Chemie der Erde 71, 101-133.

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