METAL-SILICATE FRACTIONATION IN CARBONACEOUS CHONDRITES. H. Palme[1] and K. Lodders[2]. [1]Forschungsinstitut und Naturmuseum Senckenberg, Senckenberganlage 25, D-60325 Frankfurt/Main, Germany. E-mail: herbert.palme@uni-koeln.de [2]Department of Earth and Planetary Sciences, Washington University, St. Louis, Missouri 63130, USA

Introduction: Different groups of ordinary chondrites (OC) have variable amounts of total iron (Fe_{total}), reflected in decreasing Fe/Mg from 1,96 in H- to 1,44 in L- and 1,21 in LL-chondrites. Because other siderophile elements vary in parallel, decreasing Fe/Mg ratios have been interpreted as loss of metal before parent body accretion. From trace elements and from Ni/Mg vs Fe/Mg plots [1] concluded that metal separation occurred at temperatures between 650 to 1050 K. At the time of metal loss silicates had a Mg/Mg+Fe atomic ratio of about 0,87, [2] obtained a value of 0,86.

Loss of metal is obvious in OC, Fig. 1 demonstrates that metal losses also occurred in carbonaceous chondrites (CC), as noted earlier by [1]. In CV chondrites CV/CI ratios of refractory metals are systematically lower than ratios of refractory lithophiles, Fe and associated metals are similarly depleted relative to Mg and Si, while moderately volatile lithophile and siderophile elements have similar abundance ratios (Fig.1). Intermediate is Cr, suggesting some losses with metal. The Mg/Si ratios in CC are between H and L-chondrites and correlate with Ni/Mg. New analytical data for CC indicate a higher Mg/Fe+Mg ratio for silicates during metal separation than for OC. We conclude for CC precursors: (1) separation of metal occurred at temperatures of around 1000°C (2) at the time of metal-loss silicates had little FeO (3) the precursor material of CC was probably more reduced than that of OC.

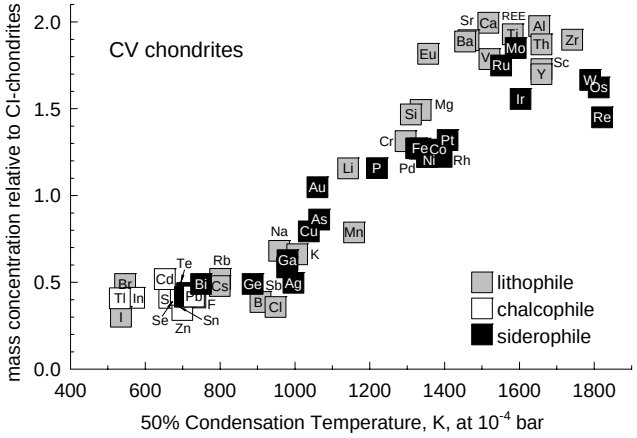

Fig. 1: CI/CV-ratios vs condensation temperatures.

References: [1] Larimer W. and Anders E. 1969. *Geochim. Cosmochim. Acta* 34: 367-387. [2] O'Neill H.St.C. and Palme H. 1998. in: The Earth's Mantle (ed.: Ian Jackson) 3-126, Cambridge University press, Cambridge, UK.