DETERMINATION OF THE CHEMICAL COMPOSITION OF METAL PHASE OF CHONDRITES BY ICP-MS AND THE DISTRIBUTION OF SIDEROPHILE ELEMENTS.

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Introduction: In the long past the atomic absorption analysis (NAA) technique has been mainly employed in the study of bulk compositions of metal phases in meteorites. At present, inductively coupled plasma mass spectrometry (ICP-MS) has found wider and wider applications in this field [1-4]. In this paper, ICP-MS was used to analyze the abundances of siderophile and chalcophile elements in metal phase of chondrites in four samples, including two equilibrated chondrites Jilin (H5) and Anlong (H5), and two unequilibrated Antarctic chondrites GRV 99019 (L3) and GRV 021603 (H3). Preliminarily explore the variation characteristics of siderophile elements in the processes of nebular condensation and asteroid thermal metamorphism.

Results and Discussion: The refractory siderophile elements in the metal phase of chondrites show a smooth distribution pattern, while the moderately and highly volatile elements tend to be depleted with increasing volatility (or with decreasing of 50% condensation temperature) in the metal phase of unequilibrated type-3 chondrites, and Cr, Mn, Ag and Zn of type H5 chondrites show highly depleted, which may be related to the distribution of them in the phase of sulfide and oxide, and this is consistent with the depleted of these elements in iron meteorites. Compared to in the type H3 chondrites, the lower content of W and Mo in type H5 metal phase may be reflect they are more lithophile and enter the silicate in the metamorphic process. In addition, the lower content of W and Mo in type H3 metal phase is probably due to the more oxidizing conditions during formation of type L.

Acknowledgements: The sample was provided by the Polar Research Institute of China. This work was supported by the Pilot Project of Knowledge Innovation Program of Chinese Academy of Sciences (KZCX2-YW-110) and the National Natural Science Foundation of China (40830421).