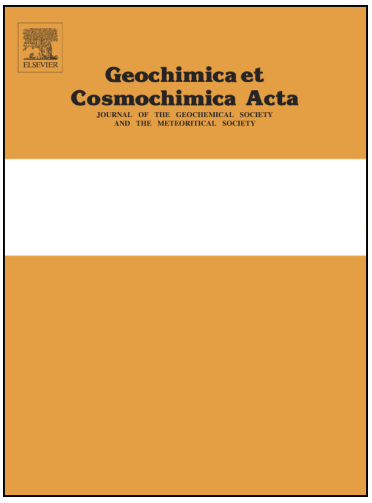

Preface to Highly Siderophile Element Constraints on Earth and Planetary Processes

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Figure 1: Delegates of the 4th International Workshop on Highly Siderophile Element Geochemistry

1.1 Overview

The geochemical properties of the highly siderophile elements (HSEs; Os, Ir, Ru, Rh, Pt, Pd, Re and Au) - being strongly iron-loving, but also chalcophile (i.e., having an affinity for sulphide), and generally occurring at ultra-trace levels in silicate rocks, their weathered products, and oceanic waters - mean that this suite of elements and their isotopic compositions are useful in tracing a wide variety of processes. Thus, the HSEs are useful tracers with which to tackle major research questions pertinent to past and present-day change at a variety of scales and in a range of Earth and other-worldly environments by constraining reservoir compositions, chemical drivers, and the timing of key events and/or transformation rates.

This special issue of Geochimica et Cosmochimica Acta brings together a number of contributions presented at the 4th International Workshop on Highly Siderophile Element Geochemistry (Durham, UK, 2016), and includes a modest number of related works from the wider community. This workshop was twice the size of the previous in its series, and represented the timely re-establishment of these 4-yearly meetings after a 10 year hiatus. This forum provided for the presentation of new findings pertinent to low- and high-temperature geochemical processes and allowed ample time for discussion so as to effectively integrate ideas from all corners of the HSE geochemistry community. To reflect emerging areas of interest and the capability of new instrumentation, emphasis was given to the application of HSEs in studying planetary processes, through both meteoritical studies and experimental petrology, and also to investigations of HSE systematics at mineral to atom-levels across the spectrum of scientific themes. The collection of original research contributed to this special issue