

Melting and Differentiation of Ordinary Chondrite Parent Body Material

Z. Vaci, C.B. Agee, M. Humayun

Institute of Meteoritics, Department of Earth and Planetary Science, University of New Mexico

Among the ungrouped achondrites, several samples have been identified that have oxygen isotopes resembling those of the ordinary chondrites. These meteorites exhibit partial to full differentiation of metal and silicate components, and this is reflected in their modal mineralogy and major and trace element geochemistry. Major and trace element abundances in Northwest Africa (NWA) 11042, NWA 11575, and Antarctic meteorite PAT 91501 were measured using LA-ICP-MS in order to explore the mode and extent of melting and differentiation that each rock experienced. All three show large depletions of siderophile elements suggestive of low P-T core formation, and their rare earth element abundances suggest magmatic differentiation via large-scale melting.