

Monday, March 14, 2005
TERRESTRIAL PLANET FORMATION
2:15 p.m. Salon A

Chairs: T. Rushmer
D. C. Rubie

- 2:15 p.m. Righter K. * Sutton S. R. Newville M. Le L. Schwandt C. S.
Micro-XANES Measurements on Experimental Spinel and the Oxidation State of Vanadium in Coexisting Spinel and Silicate Melt [#1140]
 We show that experimental spinels coexisting with silicate melt always have lower valence vanadium, and that spinels typically have 3+, whereas the coexisting melt has 4+ or 5+. Implications of these results for planetary basalts will be discussed.
- 2:30 p.m. Kegler Ph. * Holzheid A. Rubie D. C. Frost D. Palme H.
New Results of Metal/Silicate Partitioning of Ni and Co at Elevated Pressures and Temperatures [#2030]
 New experiments of metal silicate partitioning of Ni and Co confirm earlier conclusions that the Ni and Co contents of the Earth's mantle was not established by metal-silicate equilibration in a deep magma ocean.
- 2:45 p.m. Danielson L. R. * Sharp T. G. Hervig R. L.
Implications for Core Formation of the Earth from High Pressure-Temperature Au Partitioning Experiments [#1955]
 The results of high P-T Au partitioning experiments and multi-variable modeling are consistent with the equilibrium core formation hypothesis. Metal-silicate equilibrium could have occurred in a magma ocean at pressures of 27 GPa and 2127°C.
- 3:00 p.m. Humayun M. * Rushmer T. Rankenburg K. Brandon A. D.
A Model for Siderophile Element Distribution in Planetary Differentiation [#2208]
 Model shows the siderophile element pattern of residual metal in equilibrium with S-rich metallic liquids; ureilites appear to have residual metal from low-degree partial melts.
- 3:15 p.m. Rushmer T. * Petford N. Humayun M.
Shear-induced Segregation of FeLiquid in Planetsimals: Coupling Core Forming Compositions with Transport Phenomena [#1320]
 Using a combination of experimental work and numerical modeling, we explore rates of core formation during planetesimal growth. The relationship between liquid metal fraction, HSE concentrations and liquid metal flow rates are addressed.
- 3:30 p.m. Terasaki H. Rubie D. C. * Mann U. Frost D. Langenhorst F.
The Effects of Oxygen, Sulphur and Silicon on the Dihedral Angles Between Fe-rich Liquid Metal and Olivine, Ringwoodite and Silicate Perovskite: Implications for Planetary Core Formation [#1129]
 The effects of dissolved O, S, and Si on percolative core formation on Earth and Mars have been studied experimentally. Complete metal-silicate separation by percolation was not possible on either planet, indicating the necessity of a magma ocean.
- 3:45 p.m. Bell D. R. * Hervig R. L. Buseck P. R.
Li Isotope Studies of Olivine in Mantle Xenoliths by SIMS [#2178]
 Li isotope heterogeneity is recorded from intra-mineral to regional scales in olivine from terrestrial mantle xenoliths. $\delta^7\text{Li}$ variations with a range of 25‰ result from magmatic mixing, metasomatic, transport and alteration effects.

- 4:00 p.m. Marty B. * Yokochi R. Ballentine C. J.
Neon Isotope Heterogeneity in the Terrestrial Mantle: Implication for the Acquisition of Volatile Elements in Terrestrial Planets [#1865]
Neon presents a primordial isotope heterogeneity in the terrestrial mantle. Ne coming from the deep mantle is solar-like whereas neon sampled from the convective mantle is typical of Ne trapped in gas-rich meteorites, implying different acquisition processes.
- 4:15 p.m. Marrocchi Y. * Derenne S. Marty B. Robert F.
On the Sitting of Trapped Noble Gases in Insoluble Organic Matter of Primitive Meteorites [#1780]
Solvation experiment was performed on insoluble organic matter of Orgueil (CI). Results suggest that P1 noble gases are sited in the volume of organic matter.