

Monday, March 15, 2004
SPECIAL SESSION
OXYGEN IN THE SOLAR SYSTEM II
2:15 p.m. Marina Plaza Ballroom

Chairs: K. Righter
J. R. Lyons

- 2:15 p.m. Lyons J. R. * Young E. D.
Evolution of Oxygen Isotopes in the Solar Nebula [#1970]
 A photochemical model of the solar nebula is used to investigate the time evolution of oxygen isotopes that occurs due to self shielding during CO photodissociation, and to predict isotope values for initial water in the nebula.
- 2:30 p.m. Greenwood J. P. *
Disequilibrium Melting of Refractory Inclusions: A Mechanism for High-Temperature Oxygen Isotope Exchange in the Solar Nebula [#2132]
 A mechanism for oxygen isotope exchange of CAIs is presented.
- 2:45 p.m. Krot A. N. * Libourel G. Chaussidon M.
Oxygen Isotopic Compositions of the Al-rich Chondrules in the CR Carbonaceous Chondrites: Evidence for a Genetic Link to Ca-Al-rich Inclusions and for Oxygen Isotope Exchange During Chondrule Melting [#1389]
 The Al-rich chondrules in CRs formed by melting of ¹⁶O-rich Ca,Al-rich precursors, largely composed of anorthite, diopside, and spinel, and ¹⁶O-depleted Fe,Mg-chondrule precursors, and experienced varying degrees of O-isotope exchange during melting.
- 3:00 p.m. Fedkin A. V. * Grossman L.
Nebular Formation of Fayalitic Olivine: Ineffectiveness of Dust Enrichment [#1823]
 fO₂ enhancement of nebular regions by reasonable degrees of enrichment in dust of plausible compositions yields X_{Fa} in condensate olivine below that seen in UOCs at temperatures where diffusion stops, except for very slow cooling and tiny grains.
- 3:15 p.m. Righter K. *
Water in Terrestrial Planets: Always an Oxidant? [#1674]
 The role of water as an oxidant in two different planetary settings — magma and mantles — will be compared.
- 3:30 p.m. Sutton S. R. * Karner J. M. Papike J. J. Delaney J. S. Shearer C. K. Newville M. Eng P. Rivers M. Dyar M. D.
Oxygen Barometry of Basaltic Glasses Based on Vanadium Valence Determination Using Synchrotron MicroXANES [#1725]
 We describe here a new, non-destructive method for valence determinations of vanadium and oxygen fugacity estimates for basaltic glasses with spatial resolution of a few micrometers using synchrotron x-ray absorption near edge structure (XANES) spectroscopy.
- 3:45 p.m. Karner J. M. * Sutton S. R. Papike J. J. Delaney J. S. Shearer C. K. Newville M. Eng P. Rivers M. Dyar M. D.
A New Oxygen Barometer for Solar System Basaltic Glasses Based on Vanadium Valence [#1269]
 An oxybarometer based on vanadium valence and applicable to basaltic glasses covers eight orders of magnitude in oxygen fugacity.

- 4:00 p.m. McCanta M. C. * Rutherford M. J. Dyar M. D. Delaney J. S.
The Relationship Between Clinopyroxene Fe^{3+} Content and Oxygen Fugacity [#1198]
We present an experimental investigation into the partitioning of Fe^{3+}/Fe^{2+} between clinopyroxene and a basaltic shergottite melt as a function of fO_2 . Clinopyroxene-melt partitioning behavior can serve as an oxybarometer for clinopyroxene-bearing rocks like the Martian meteorites.
- 4:15 p.m. Brenan J. M. McDonough W. F. *
Olivine-Silicate Melt Partitioning of Iridium [#1933]
Olivine-melt partition coefficients for iridium increase with decreasing oxygen fugacity, such that iridium becomes compatible in olivine. Partitioning behaviour documented here and in our previous work suggests that olivine exerts a strong control on PGE fractionation in natural magmatic systems.