Monday, March 19, 2012
ACHONDRITES: FROM CORE TO CRUST
8:30 a.m. Montgomery Ballroom

Chairs: **Kathryn Gardner-Vandy**
Deon van Niekerk

8:30 a.m. Goldstein J. I. * Huss G. R. Scott E. R. D.
Carbon Contents of Metallic Phases in Iron Meteorites **[#1339]**
To understand the effects of carbon on phase growth in iron meteorites, we measured the C distribution between kamacite, taenite, and plessite regions. Carbon concentrations were systematically lower in meteorites lacking graphite and carbides.

8:45 a.m. Scott E. R. D. * Goldstein J. I.
Occurrence of Carbides and Graphite in Iron Meteorites and Origin of C-Rich Irons **[#2671]**
Two carbides—cohenite Fe_3C and haxonite $Fe_{23}C_6$ — and graphite are abundant in groups IAB and IIICD, and totally absent in groups IVA and IVB reflecting nebular conditions during the formation of chondritic precursors.

9:00 a.m. Antonelli M. A. * Peters M. Farquhar J.
Sulfur Isotopic Compositions of Magmatic and Non-Magmatic Iron Meteorites **[#2081]**
We report the multiple sulfur isotopic compositions of fourteen iron meteorites from three different groups. We find that there are systematic differences in the sulfur isotopic composition of magmatic versus non magmatic iron meteorites.

9:15 a.m. Andreasen R. * Rehkämper M. Benedix G. K. Theis K. J. Schönbächler M. Smith C. L.
Lead-Thallium Chronology of IIAB and IIIAB Iron Meteorites and the Solar System Initial Abundance of Lead-205 **[#2902]**
Pb-Tl isotope data for the IIAB irons suggest that the IIAB metal segregated about 2 My after solar system formation and crystallized about 13 My later. Their initial Tl composition suggests slightly higher levels of ^{205}Pb than previously thought.

9:30 a.m. Horstmann M. Humayun M. * Harries D. Langenhorst F. Chabot N. L. Bischoff A.
Wüstite in the Almahata Sitta Polymict Ureilite: Implications for Oxygen During Asteroidal Differentiation **[#1876]**
We report evidence for oxygen in metallic melt systems preserved as wüstite within Almahata Sitta MS-166 and the role of the Fe-S-O system during asteroidal differentiation. MS-166 might be a first sample of the S-rich metallic melt from the UPB.

9:45 a.m. Wilson L. * Goodrich C. A.
Melt Formation, Migration and Rapid Extraction from Differentiated Asteroid Interiors: Lessons from Ureilites Extended to All Asteroids **[#1128]**
We show that extraction of partial melts from the mantles of all differentiated asteroids was rapid, and was not strongly dependent on gas being present. Rapid melt transfer argues against magma oceans and for magma ponding in subcrustal sills.

10:00 a.m. Goodrich C. A. * Sutton S. R. Wirick S.
Valences of Cr in Ureilite Olivine and Implications for Ureilite Petrogenesis **[#1221]**
We use XANES to directly determine valences of Cr in olivine in ureilites. Results address the question of whether the large range of ureilite Fo corresponds to variation in oxidation state.

10:15 a.m. Jambon A. * Baghdadi B. Barrat J. A.
Peridotitic Angrites are Chimerolites **[#1758]**
Peridotitic (kamacite-bearing) angrites are annealed breccias made of angritic silicate and exogenous metal.

10:30 a.m. King P. L. * Spilde M. N. Wirick S. Lanzirotti A. Agee C. B.
Redox History of Early Solar System Planetesimals Recorded in the D'Orbigny Angrite **[#2436]**
V-valence state oxybarometry of the D'Orbigny angrite show that the crystalline and cavity pyroxenes in the rock formed at ~IW – 0.7, but that cross-cutting glass formed at IW + 2.9. Oxidation of the glass may be due to lowered H_2 on the parent body.

10:45 a.m. Gardner-Vandy K. G. * Lauretta D. S. McCoy T. J.
Formation History of the Brachinites: Partial Melts from an R Chondrite-Like Parent Body **[#1610]**
We present new thermodynamic data for brachinite formation conditions. We then discuss the implications of a series of 1-bar, gas-mixing, partial melting experiments of an R4 chondrite to the history and formation of the brachinites.

11:00 a.m. Hunt A. C. * Benedix G. K. Kreissig K. Hammond S. Strekopytov S. Rehkamper M.
Using Geochemical Data to Assess the Evolution of the Winonaite-IAB Parent Body **[#1818]**
We aim to produce a geochemical dataset for the winonaites to assess melting processes occurring on the winonaite-IAB parent body. New analyses suggest the winonaites are unmelted, implying heterogeneous heat distribution in the parent body.

11:15 a.m. Hidaka Y. * Yamaguchi A. Shirai N. Sekimoto S. Ebihara M.
Lithophile Element Characteristics of Acapulcoite-Lodranite and Winonaites: Implications for the Chemical Composition of Their Precursor Materials **[#1785]**
We have analyzed 13 primitive achondrites chemically and found one acapulcoite and two winonaites that show "primitive" characteristics. From their chemical data, we discuss the chemical composition of their precursor chondritic materials.

11:30 a.m. van Niekerk D. * Keil K.
Anomalous Enstatite Meteorites Queen Alexandra Range 94204 and Pairs: The Perplexing Question of Impact Melts or Partial Melt Residues, Either way, Unrelated to Yamato 793225 **[#2644]**
QUE 94204 and its seven pairs are anomalous enstatite meteorites that may either be impact melt products, or partial melt residues. We explore the petrology of these meteorites and present new findings.