DIFFERENTIATED METEORITES II: FROM ACHONDRITES TO IRONS AND BACK
1:30 p.m.   Agoudal Room

Chairs:  Takashi Mikouchi
          Edward Scott

1:30 p.m.  Benedix G. K. *   Bland P. A.   Reddy S. M.   Timms N. E.
          *Mapping Geologic Processes in Bunburra Rockhole [#5296]
We present new EBSD data on Bunburra Rockhole basaltic achondrite. Crystallographic properties provide new insights into the formation of this meteorite.

          *The Unusual Case of Achondrite Lewis Cliff 88763 and Evidence for Highly Oxidised, Partially Melted Asteroids [#5223]
Lewis Cliff 88763 originates from limited partial melting of oxidized material, extending the range of parent body compositions in the early solar system.

2:00 p.m.  Nehru C. E. *   Boesenberg J. S.   Weisberg M. K.
          *Taffassasset and Primitive Achondrites: Records of Planetary Differentiation [#5382]
Taffassasset and brachinites may result from low degrees partial melting in bodies with differentiated interiors and chondritic crusts. Alternatively, formation of an olivine-rich residue in a late accreting body, where AI-26 heating is inefficient.

2:15 p.m.  Downes H. *   Abernethy F.   Smith C. L.   Ross A. J.   Jenniskens P.
          Grady M. M.   Shaddad M.
          Origin of Carbon in Ureilite Meteorites: A Step Combustion Study of Fragments of Almahata Sitta [#5224]
Carbon and nitrogen isotope compositions determined in five ureilitic fragments of Almahata Sitta show main release values that are different from those of most known carbonaceous chondrites, suggesting heterogeneity of carbon in the solar nebula.

2:30 p.m.  El Goresy A. *   Nakamura T.   Miyahara M.   Gillet E.   Jogo K.   Yamanobe M.   Ishida H.
          *The Unique Differentiated Meteorite NWA7325: Highly Reduced, Stark Affinities to E-Chondrites and Unknown Parental Planet [#5028]
Unusual sulfide mineralogy, REE and trace element abundances: CaS residues with a novel CI-normalized REE pattern, positive Eu anomaly and Ba in a sulfide aggregate. NWA 7325 classification to be related to ureilites is discrepant with our results.

2:45 p.m.  Hasegawa H. *   Haba M. K.   Nagao K.   Mikouchi T.   Bizzarro M.
          *Noble Gas and Mineralogical Studies of NWA 7325 Ungrouped Achondrite [#5306]
We studied noble gases and mineralogy of NWA 7325. It’s well degassed noble gas composition with excess 129Xe and the absence of fissionogenic 134Xe and 136Xe suggests NWA 7325 originated from the mantle of its parent body in the early solar system.

3:00 p.m.  Saxena S. K. *   Eriksson G.   Brosh E.   Pelton A.
          REPLACED by J. T. Wasson et al. [#5446]
          *Chemical Composition of Earth’s Core [#5324]
Thermodynamic database for the Fe-S system has been assessed from experimental data to planetary core high pressures.

3:15 p.m.  Langendam A. D. *   Tomkins A. G.
          *Core Formation in Oxidized Parent Bodies: Experiments Using the Karoonda Meteorite [#5119]
Experiments have been conducted to determine how ice-laden parent bodies can form cores in the early stages of planetesimal formation. These experiments show that cores in oxidized parent bodies can form cores quickly.
3:30 p.m. Tarduno J. A. * Bono R. K. Cottrell R. D. Ferrière L. Scott E. R. D.  
Paleomagnetism of the Eagle Station Pallasite [#5453]  
New paleomagnetic data suggest time dependent dynamo action in the Eagle Station pallasite parent body core.

3:45 p.m. Scott E. R. D. * Krot T. V. Goldstein J. I. Benedix G. K.  
Thermal and Impact Histories and Origin of Winonaites and IAB Iron Meteorites [#5107]  
Metallographic cooling rates for five winonaites determined from taenite grains using the Wood technique are 30 to >1000°C/Myr. Main group IAB irons cooled at 10°–25°C/Myr suggesting that winonaites cooled in the outer layers of the parent body.

4:00 p.m. Cook D. L. * Schönbächler M.  
Iron Isotopic Composition of Troilites from Iron Meteorites [#5137]  
We have measured Fe isotopes in troilite (FeS) samples from iron meteorites previously analysed for Ni isotopes that show anomalies in 64Ni. No resolvable anomalies at the sub-epsilon level were observed in the most neutron-rich Fe isotope (58Fe).

4:15 p.m. Wasson J. T. * Hoppe P.  
Co/Ni Double Ratios in Mesosiderite Metal and the Unrealistically Low Cooling Rates [#5405]  
Cooling-rate estimates for mesosiderites are implausibly low, about 0.2 K/Ma; new data on Co and Ni at kamacite/taenite interfaces imply equilibration at low temperatures, but textures indicate annealing after the structure was damaged by shock.

4:30 p.m. Luais B. * Ali F. Wasson J. T.  
Low Germanium Isotopic Composition of IIG Iron Meteorites: Relationship with IIAB Irons and Influence of Sulfur and Phosphorus [#5417]  
New Ge isotopic compositions of IIG irons are the same as in IIB irons, which supports the proposal that IIG irons formed as the final products of the IIAB core. We show further evidence that IIA and IIB irons have distinct Ge isotopic compositions.

4:45 p.m. Mikouchi T. * Aoyagi Y. Sugiyama K. Yokoyama Y. Goodrich C. A. Zolensky M. E.  
Experimental Crystallization of Iron Martensite in the Almahata Sitta Ureilite [#5069]  
We performed a crystallization experiment of iron martensite in Almahata Sitta ureilite and found that super-rapid cooling (>1 deg/sec) is required to form the observed martensite, suggesting a secondary disruption of ureilite daughter body(ies).