Antarctic Meteorite Newsletter

Volume 41, Number 1 February 2018

Curator's Comments

Kevin Righter, NASA-JSC

This newsletter reports 234 new meteorites from the 2014, 2015, and 2016 ANSMET seasons from the Dominion Range (DOM 14), Miller Range (MIL 15), and Elephant Moraine (EET 16) areas. Meteorites include a IIIAB iron, an L chondrite impact melt, a lodranite (?), and 6 unequilibrated ordinary chondrites. We also reclassified a number of meteorites (see below) and remind requestors that some of our samples are small and rare and require stronger than usual justification when submitting a request (also see below).

Requesting Small And Special Samples

The US Antarctic meteorite collection has many rare samples that are preserved for scientific study. Many of these samples have been in the collection since the first years of the program, and have less material available for study. Others are simply small, and there is limited material available. Finally, some have been disaggregated during sample preparation and handling due to their degree of weathering, fracturing, and overall physical state. These samples will be preserved as best as possible, which also means that not all requests can be honored. For severe cases, sample requests may be rejected to save material for future studies of the most compelling nature. For example, requests for multiple members of a meteorite group as part of a cursory survey are unlikely to be honored for samples of this small and rare nature. This message is simply a reminder that requestors should do the necessary background research on such samples to ensure that their request has as much specific justification as possible. Resources for obtaining information about our samples include the Antarctic Meteorite Newsletters, our online database, and the online bibliography which lists over 1600 peer reviewed publications through 2017:

- Antarctic Meteorite Newsletter
- Antarctic Meteorite Classification Database
- Sample References

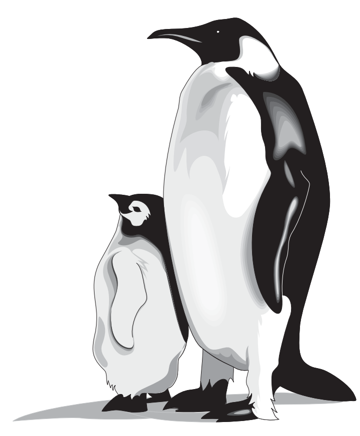
In addition, detailed information is available in our sample compendia:

- The Martian Meteorite Compendium
- The Lunar Meteorite Compendium
- The HED Compendium

A periodical issued by the Meteorite Working Group to inform scientists of the basic characteristics of specimens recovered in the Antarctic.

Edited by Cecilia Satterwhite and Kevin Righter, NASA Johnson Space Center, Houston, Texas 77058

Inside this Issue



Sample Request Deadline
March 08, 2018

MWG Meets
March 23-24, 2018

Reminder To Sign And Return Your Annual Inventory

US Antarctic meteorite inventories were mailed to all PIs in November 2017. You received a list of samples with a header at the top for two signatures — one for you (the PI) and one for an institutional official. Thanks to all of those who have returned their inventories to us, but if you haven't already, please follow these instructions:

- Print the list
- Compare your sample list to samples in your possession
- Confirm samples are in your possession unless consumed during research (if approval was obtained during original sample request), and note any discrepancies
- Sign/date top of first inventory page
- Institutional official must sign/date top of first page
- Scan and email it back to us (JSC-ARES-MeteoriteRequest@nasa.gov)

PIs that do not respond to inventory queries by the NASA Curator will not receive samples from the collection.

Reminder to Acknowledge Samples Received from NASA-JSC

When publishing results of your research, please include the split numbers used in the research. We also request that scientists use the following acknowledgement statement when reporting the results of their research in peer reviewed journals: "US Antarctic meteorite samples are recovered by the Antarctic Search for Meteorites (ANSMET) program which has been funded by NSF and NASA, and characterized and curated by the Astromaterials Curation Office at NASA Johnson Space Center and the Department of Mineral Sciences of the Smithsonian Institution." Such an acknowledgement will broaden the awareness of the funding mechanisms that make this program and these samples possible.

We suggest you find out how to acknowledge samples received from all the collections/museums from which you have received materials so that all the institutions making samples available to you receive proper credit and acknowledgement.

Reclassifications

1) Reclassification of PCA 82500 currently a CK5, but should be a CK3. The observations supporting the low petrologic grade include (1) lack of ilmenite exsolution from magnetite, a property typically seen in type 3 CKs and (2) olivine zoning observed in BSE within the largest chondrule in the type section. Taken together, these suggest classification as a type 3.

2) Reclassification of various unusual carbonaceous chondrites:

The compositional, mineralogical, and petrological characteristics of a number of carbonaceous chondrites in our collection has been recognized by our PIs. To draw a distinction between these samples and the more standard members of their groups, we have reclassified the following samples due to observations made by Davidson et al. (2015) and Floss and Brearley (2014) for MIL 07687, and by Choe et al. (2010) for all the rest:

DOM 03238 : CO3 chondrite (anomalous) (Choe et al., 2010)
EET 90043 : CO3 chondrite (anomalous) (Choe et al., 2010)
MIL 07687 : C2 chondrite ungrouped (Davidson et al., 2015; Floss and Brearley, 2014)
GRA 98025 : C2 chondrite ungrouped (Choe et al., 2010)
GRO 95566 : CM chondrite (anomalous) (Choe et al., 2010)
LEW 85311 : CM chondrite (anomalous) (Choe et al., 2010) (paired with LEW 85306, 85307, 85309, and 85312)
PCA 91008 : CM chondrite (anomalous) (Choe et al., 2010)
QUE 99038 : CM chondrite (anomalous) (Choe et al., 2010)
WIS 91600 : CM chondrite (anomalous) (Choe et al., 2010) (paired with WIS 91608)

Choe, W. H., Huber, H., Rubin, A. E., Kallemeyn, G. W., & Wasson, J. T. (2010) . "Compositions and taxonomy of 15 unusual carbonaceous chondrites. " *Meteoritics & Planetary Science 45*, 531-554.

Davidson, J., Nittler, L. R., Stroud, R. M., Takigawa, A., De Gregorio, B. T., Alexander, C. M., ... & Cody, G. D. (2015) . "Organic matter in the unique carbonaceous chondrite Miller Range 07687: a coordinated in situ NanoSIMS, FIB-TEM, and XANES study. " *46th Lunar and Planetary Science Conference, Abstract # 1609*.

Floss, C., & Brearley, A. J. (2014) . "Presolar grain abundance variations in the unique carbonaceous chondrite MIL 07687. " *77th Annual Meeting of the Meteoritical Society, Abstract # 5183*.

3) Reclassification of equilibrated ordinary chondrites

A) MAC 88122

This sample was originally announced as an LL5 chondrite in newsletter 13, number 2 (March 1990), and then reclassified as an L/LL5 chondrite in newsletter 30, number 2 (August 2007). The 2007 reclassification was a mistake – we find no evidence for the L/LL classification, and thus re-classify this sample back to its original LL5 classification based on the olivine content (Heggy et al., 2012, Icarus 221, 925-939) and the Ni and Co content of the metal (Table of reclassifications from AMN 30, no. 2, data provided by Welten and Nishiizumi in 2007).

B) GRO 85 and 03 samples

The ANSMET 2003-2004 field team recovered meteorites from the Grosvenor Mountains region of the TransAntarctic Mountains. Within this area was a small collection of ~80 meteorites that appeared to be pieces of the same fall, based on their weathering state, hand specimen appearance, and the fact that they were found in a narrow ellipse with a long axis of 1.7 km, with the largest fragments at one end (Kress et al., 2007).

Subsequent classification of these samples included a wide range of chondrites including LL, L and H, but detailed chemical analyses of 6 larger specimens from the field yielded metal content and composition consistent with H chondrite samples (Welten et al., 2009). Because of the discrepancy between the original classification and the subsequent studies, and the fact that this small strewnfield may be of special interest to meteoriticists, we have measured the magnetic susceptibility of all samples from this proposed strewnfield. The results indicate that most are indeed H chondrites, and we present the full dataset here, and propose re-classification of those that were classified previously as L or LL, as indicated in the table. Values > 4.8 are consistent with H chondrites, and those < 4.5 are consistent with LL chondrites. After reclassification, only two remain that are consistent with L chondrites (GRO 03005 and GRO 03036), and there are no LL chondrites.

Welten, K. C.; Nishiizumi, K.; Caffee, M. W.; Leclerc, M. D.; Jull, A. J. T. (2009). "Cosmogenic Radionuclides in Chondrite Shower from Otway Massif. "*40th Lunar and Planetary Science Conference*, (Lunar and Planetary Science XL), held March 23-27, 2009 in The Woodlands, Texas, Abstract # 1488.

Kress, M. E.; Benedix, G. K.; Schutt, J.; Harvey, R. P. (2007) . "An Unusual Strewn Field at the Otway Massif, Grosvenor Mountains, Antarctica "*70th Annual Meteoritical Society Meeting*, held in August 13-17, 2007, Tucson, Arizona. Meteoritics and Planetary Science Supplement, Vol. 42, Abstract # 5270.

C) DOM 85 and 03 samples

The Dominion Range has been visited by ANSMET teams during the 1985-86, 2003-04, 2008-09, 2010-11, 2014-15 seasons. A large ordinary chondrite shower dominates the collection in this area. Initial characterization of the samples was yielding ~60% LL chondrites. Several years ago we began to suspect this classification because we weren't seeing any LL chondrite in random thin section sampling, and targeted microprobe analysis of 15 LL chondrites from the DOM 08 and DOM 10 season revealed they are actually L chondrites. We decided a systematic reclassification of this field is necessary to have accurate statistics. In the continued efforts to reclassify, we report magnetic susceptibility data for 142 samples from the 2003-04 and 1985-86 seasons. As suspected, the majority of these samples are L chondrites, with very few LL chondrites. The samples requiring reclassification are indicated in the table as well. Values > 4.8 are consistent with H chondrites, and those < 4.5 are consistent with LL chondrites.

(Tables for GRO and DOM samples are at the end of the newsletter starting on page 17.)

Report from the Smithsonian

Cari Corrigan, Geologist (Dept. of Mineral Sci.)

Things continue to evolve and adapt as necessary in the Division of Meteorites at the Smithsonian. Our new microprobe (a JEOL JXA 8530f+ Hyperprobe) is still running beautifully, and it is a good thing! Our SEM EDS detector hit a major snag, rendering it useless since the holidays. It is now the instrument we use to classify the Antarctic equilibrated ordinary chondrites, so that left us with a bit of a problem. Never fear, the Hyperprobe is here! We were able to use its state of the art capabilities to perform the EDS analyses generally the same way as we do on the SEM. Therefore, we bring you the entire newsletter with data obtained using the new instrument. Tada! It was a lot of fun figuring out how to make it happen (despite the struggles due to our learning curve)! In personnel news, we have hired another member to our laboratory staff. We would like to welcome Rob Wardell to the crew! Rob comes to us with an engineering degree and a lot of great lab experience. We welcome the addition of another capable body to our lab staff!

ANSMET 2017-2018Field Season

Jim Karner, Ralph Harvey and John Schutt
Case Western Reserve University

The 2017-18 season included both reconnaissance and systematic work. The season started on Dec. 12, 2017 as a group of eight (see pic) plus gear flew to Shackleton Glacier Camp (SHG), which was situated in the southern Transantarctic Mountains. Once at SHG the group split into two teams of four (i.e., Team A and B) and proceeded to be shuttled to their respective work sites by Twin Otter. Team A, consisting of Jim Karner, Brian Rougeux, Barbara Cohen and Julianne Gross conducted systematic searches of the Mt. Cecily/Mt. Raymond (MC/MR) icefields in the Grosvenor Mountains. The area had been visited in 1995-96, but plenty of unsearched ice remained. The MC/MR area was visually stunning with its huge rolling seas of blue ice at the bases of the mountains and nunataks, but it was really, really cold. And windy. Most days the temps were below zero (F) or just slightly above that- and the winds constantly blew at 15 knots or greater. Team A spent a total of 34 days at MC/MR, and despite the tough conditions recovered a total of 211 meteorites. The bulk of the meteorites were found by snowmobile sweeps of the large icefields, but several dozen were also found by meticulous foot-searching of the many and heavy moraines in the area.

The reconnaissance team (Team B) consisted of John Schutt, James Day, Scott Van Bommel, and Ioannis Baziotis. The team worked in the Amundsen Glacier region and evaluated six bare ice areas for potential meteorite concentrations. Their first stop was the Mt. Wisting and Mt. Prestrud area, which was first visited in 1995-96. The team spent just a few days in the area and recovered about ten meteorites through both snowmobile sweeps and moraine searching. The next move took the team to Nodvedt Nunataks, where they recovered forty meteorites; their final move took them to the Amundsen Glacier icefield where one possible meteorite was collected. Team B also spent a day performing helicopter reconnaissance of two relatively small bare ice patches in the region. The helos transported the team to both the Upper Amundsen Glacier and Devils Glacier icefields where quick foot-searches of the ice were performed. Two meteorites were recovered from the Devils Glacier ice while no rocks (of any kind) were even seen on the ice at Upper Amundsen! In summary, the reconnaissance team evaluated six bare ice areas for meteorite concentrations. Two of the sites had been previously visited (Mt. Wisting and Mt. Prestrud), but the others were first visits. A total of 52 specimens were recovered, but no significant meteorite concentrations were realized.

2017-18 ANSMET team: (l-r) Scott Van Bommel, Jim Karner, James Day, Juli Gross, Barbara Cohen, Brian Rougeux, John Schutt, Ioannis Baziotis

New Meteorites

2014-2016 Collection

Pages 5-17 contain preliminary descriptions and classifications of meteorites that were completed since publication of issue 40(2), Sept. 2017. Specimens of special petrologic type (carbonaceous chondrite, unequilibrated ordinary chondrite, achondrite, etc.) are represented by separate descriptions unless they are paired with previously described meteorites. However, some specimens of non-special petrologic type are listed only as single line entries in Table 1. For convenience, new specimens of special petrological type are also recast in Table 2.

Macroscopic descriptions of stony meteorites were performed at NASA/JSC. These descriptions summarize hand-specimen features observed during initial examination. Classification is based on microscopic petrography and reconnaissance-level electron microprobe analyses using polished sections prepared from a small chip of each meteorite. For each stony meteorite the sample number assigned to the preliminary examination section is included. In some cases, however, a single microscopic description was based on thin sections of several specimens believed to be members of a single fall.

Meteorite descriptions contained in this issue were contributed by the following individuals:

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Houston, Texas

Cari Corrigan, Julie Hoskin, and Tim McCoy
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Washington, D.C.

Antarctic Meteorite Locations

ALH	— Allan Hills	MBR	— Mount Baldr
BEC	— Beckett Nunatak	MCY	— MacKay Glacier
BOW	— Bowden Neve	MET	— Meteorite Hills
BTN	— Bates Nunataks	MIL	— Miller Range
BUC	— Buckley Island	ODE	— Odell Glacier
CMS	— Cumulus Hills	OTT	— Outpost Nunatak
CRA	— Mt.Cranfield Ice Field	PAT	— Patuxent Range
CRE	— Mt. Crean	PCA	— Pecora Escarpment
DAV	— David Glacier	PGP	— Purgatory Peak
DEW	— Mt. DeWitt	PRA	— Mt. Pratt
DNG	— D'Angelo Bluff	PRE	— Mt. Prestrud
DOM	— Dominion Range	QUE	— Queen Alexandra Range
DRP	— Derrick Peak	RBT	— Roberts Massif
EET	— Elephant Moraine	RKP	— Reckling Peak
FIN	— Finger Ridge	SAN	— Sandford Cliffs
GDR	— Gardner Ridge	SCO	— Scott Glacier
GEO	— Geologists Range	STE	— Stewart Hills
GRA	— Graves Nunataks	SZA	— Szabo Bluff
GRO	— Grosvenor Mountains	TEN	— Tentacle Ridge
HOW	— Mt. Howe	TIL	— Thiel Mountains
ILD	— Inland Forts	TYR	— Taylor Glacier
KLE	— Klein Ice Field	WIS	— Wisconsin Range
LAP	— LaPaz Ice Field	WSG	— Mt. Wisting
LAR	— Larkman Nunatak		
LEW	— Lewis Cliff		
LON	— Lonewolf Nunataks		
MAC	— MacAlpine Hills		

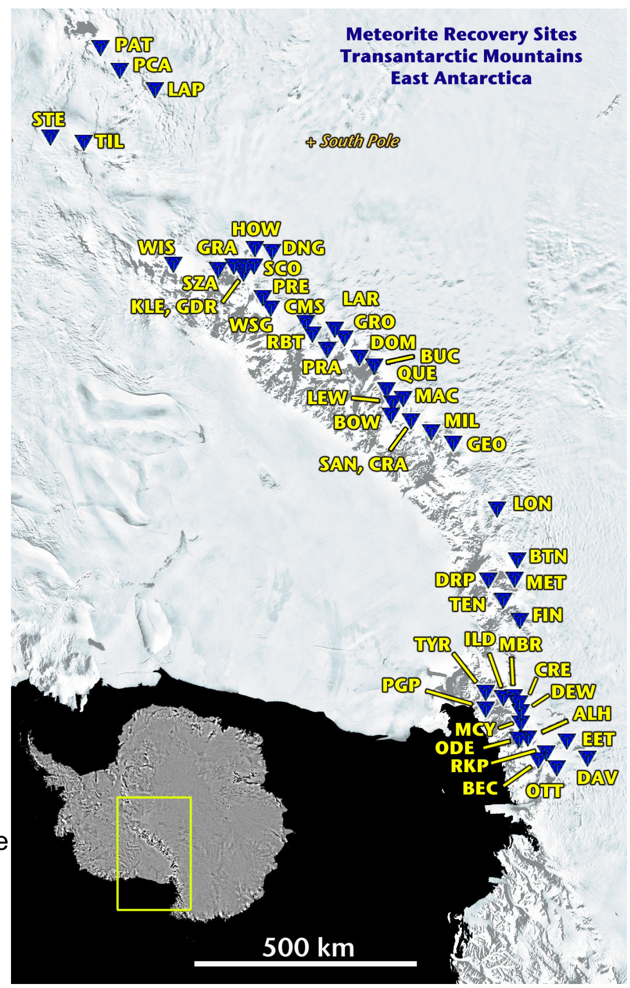


Table 1
Newly Classified Antarctic Meteorites

Sample Number	Weight (g)	Classification	Weathering	Fracturing	%Fa	%Fs
DOM 14030	31.880	L6 CHONDRITE	B	A	23	19
DOM 14031	41.660	L4 CHONDRITE	B	A	25	21
DOM 14032	25.370	L4 CHONDRITE	A/B	A/B	22	19
DOM 14033	28.240	H6 CHONDRITE	C	A	18	16
DOM 14034	11.650	L6 CHONDRITE	C	A	22	19
DOM 14035	50.550	H5 CHONDRITE	B	A	18	16
DOM 14036	17.890	LL4 CHONDRITE	B/C	A	30	24
DOM 14037	14.500	H4 CHONDRITE	B/C	A	17	7-26
DOM 14038	24.490	H6 CHONDRITE	B/C	A	18	16
DOM 14039	40.340	H5 CHONDRITE	B/C	A/B	18	16
DOM 14081	30.450	L6 CHONDRITE	C	B	22	19
DOM 14082	9.290	L3.6 CHONDRITE	B/C	A	0-34	5-19
DOM 14083	3.830	L6 CHONDRITE	C	A	25	21
DOM 14084	20.080	L5 CHONDRITE	B	A	23	19
DOM 14085	30.700	L6 CHONDRITE	B/C	A	22	19
DOM 14086	32.190	L5 CHONDRITE	B/C	A	23	19
DOM 14087	24.460	L6 CHONDRITE	B/C	A	22	19
DOM 14088	9.600	L6 CHONDRITE	B/C	A	22	19
DOM 14089	8.300	H5 CHONDRITE	C	A	17	15
DOM 14100	31.461	L6 CHONDRITE	A/B	A	23	19
DOM 14101	35.310	L6 CHONDRITE	A/B	A	23	19
DOM 14102	55.380	L6 CHONDRITE	A/B	A	23	19
DOM 14103	42.312	H6 CHONDRITE	B/C	A	17	15
DOM 14104	30.852	L6 CHONDRITE	B/C	A	22	19
DOM 14105	29.744	L6 CHONDRITE	A/B	A	22	19
DOM 14106	26.979	L6 CHONDRITE	B/C	A	22	19
DOM 14107	37.319	L6 CHONDRITE	A/B	A	22	19
DOM 14108	33.249	L6 CHONDRITE	B/C	A	22	19
DOM 14109	32.753	L5 CHONDRITE	A/B	A	22	19
DOM 14120	41.440	H6 CHONDRITE	C	A	17	15
DOM 14121	30.480	H6 CHONDRITE	Ce	A	17	15
DOM 14122	95.830	L6 CHONDRITE	B	B	23	19
DOM 14123	92.660	L6 CHONDRITE	A/B	A	22	19
DOM 14124	58.550	L3.5 CHONDRITE	B/C	A	0-48	16-24
DOM 14125	71.310	L CHONDRITE (IMPACT MELT)	C	B/C	13-42	12-25
DOM 14126	59.060	H6 CHONDRITE	Ce	A/B	17	15
DOM 14128	42.990	L6 CHONDRITE	C	A	23	19
DOM 14129	105.840	H4 CHONDRITE	Be	A/B	18	15
DOM 14130	19.330	L6 CHONDRITE	B	A	23	19
DOM 14131	30.010	L6 CHONDRITE	B	A	23	19
DOM 14132	20.310	L6 CHONDRITE	Be	A	22	19
DOM 14133	9.920	L6 CHONDRITE	Ce	A	22	19
DOM 14134	30.110	L6 CHONDRITE	Ce	A/B	22	19
DOM 14135	18.040	L6 CHONDRITE	B/Ce	A	23	19
DOM 14136	24.860	L5 CHONDRITE	Ce	A/B	23	19
DOM 14137	13.870	L6 CHONDRITE	C	A	23	19
DOM 14138	34.630	L6 CHONDRITE	B	A	23	19
DOM 14139	47.050	L6 CHONDRITE	B	A	23	19
DOM 14171	52.140	L5 CHONDRITE	A/B	A	22	19
DOM 14172	99.030	L5 CHONDRITE	A/B	A	22	19
DOM 14173	40.320	L5 CHONDRITE	A/B	A	22	19
DOM 14174	72.320	L5 CHONDRITE	A/B	A	22	19

Sample Number	Weight (g)	Classification	Weathering	Fracturing	%Fa	%Fs
DOM 14175	96.420	H6 CHONDRITE	C	A	17	15
DOM 14176	39.100	L5 CHONDRITE	A/B	A/B	22	19
DOM 14177	61.890	L5 CHONDRITE	A/B	A	22	20
DOM 14178	74.960	L6 CHONDRITE	A/B	A	22	20
DOM 14179	83.130	H6 CHONDRITE	C	A	17	15
DOM 14180	55.910	H6 CHONDRITE	Ce	A	17	15
DOM 14181	44.960	H6 CHONDRITE	Ce	A	17	15
DOM 14182	25.890	L5 CHONDRITE	B	A/B	23	18
DOM 14183	20.260	LL3.7 CHONDRITE	A	A/B	15-31	5-26
DOM 14184	83.030	L5 CHONDRITE	Be	A	22	19
DOM 14185	36.720	H4 CHONDRITE	Ce	A	17	15
DOM 14186	82.560	H5 CHONDRITE	B/C	A/B	19	17
DOM 14187	11.780	H5 CHONDRITE	Ce	A	17	15
DOM 14189	13.630	L6 CHONDRITE	A/B	A/B	22	19
DOM 14190	36.032	L6 CHONDRITE	A/B	A	22	19
DOM 14191	14.950	H6 CHONDRITE	B/Ce	A	17	15
DOM 14193	25.186	L6 CHONDRITE	B/C	A	23	19
DOM 14194	31.703	H6 CHONDRITE	B/C	A	19	16
DOM 14195	6.196	L5 CHONDRITE	B/C	A/B	23	19
DOM 14196	7.539	H6 CHONDRITE	B/C	A	17	15
DOM 14197	17.157	L6 CHONDRITE	B/C	A	22	19
DOM 14198	7.386	L6 CHONDRITE	B/C	A/B	22	19
DOM 14199	9.759	L5 CHONDRITE	B/C	A	22	
DOM 14200	15.880	L5 CHONDRITE	Ce	A	23	19
DOM 14201	16.800	L3.6 CHONDRITE	Be	A	1-30	2-24
DOM 14202	11.540	L6 CHONDRITE	C	A	22	19
DOM 14203	14.340	L6 CHONDRITE	A/B	A	25	21
DOM 14204	18.460	H6 CHONDRITE	Ce	A	18	16
DOM 14205	29.480	L5 CHONDRITE	C	A/B	23	20
DOM 14206	14.200	L6 CHONDRITE	C	A	23	20
DOM 14207	26.030	H5 CHONDRITE	Be	A	17	15
DOM 14208	9.140	L6 CHONDRITE	Ce	A/B	25	21
DOM 14209	13.420	L6 CHONDRITE	C	A	22	19
DOM 14220	87.186	L6 CHONDRITE	B/C	A/B	22	19
DOM 14221	44.183	H6 CHONDRITE	B	A	20	19
DOM 14222	57.549	L5 CHONDRITE	A/B	A	22	18
DOM 14223	64.981	LL6 CHONDRITE	B/C	A/B	27	24
DOM 14224	77.064	H6 CHONDRITE	B/Ce	A/B	21	18
DOM 14225	71.004	L3.8 CHONDRITE	B/Ce	A/B	18-27	6-28
DOM 14226	43.339	LL5 CHONDRITE	B/C	A/B	28	24
DOM 14227	15.450	H6 CHONDRITE	B/Ce	A	19	16
DOM 14228	5.520	LL6 CHONDRITE	A/B	A	29	24
DOM 14229	8.777	H6 CHONDRITE	B/C	A/B	21	20
DOM 14240	15.870	L5 CHONDRITE	A/B	A/B	23	19
DOM 14241	20.470	L6 CHONDRITE	C	A	23	19
DOM 14242	23.190	L6 CHONDRITE	B/Ce	A	23	19
DOM 14243	18.580	H6 CHONDRITE	C	A	19	16
DOM 14244	22.430	H6 CHONDRITE	C	A	18	16
DOM 14245	23.120	L6 CHONDRITE	C	B	23	19
DOM 14246	10.680	L6 CHONDRITE	C	A	25	21
DOM 14247	10.020	H6 CHONDRITE	C	A/B	17	15
DOM 14248	8.560	H5 CHONDRITE	B/C	A/B	17	15
DOM 14249	5.610	H6 CHONDRITE	C	A	18	15
DOM 14271	7.451	L6 CHONDRITE	B/C	B	21	19

Sample Number	Weight (g)	Classification	Weathering	Fracturing	%Fa	%Fs
DOM 14272	10.907	LL6 CHONDRITE	B/C	A	27	23
DOM 14273	7.001	LL5 CHONDRITE	B/C	A	27	23
DOM 14274	6.390	LL6 CHONDRITE	B/C	A	27	23
DOM 14275	10.253	LL6 CHONDRITE	A/B	A	27	23
DOM 14276	13.744	LL6 CHONDRITE	A/B	A	27	23
DOM 14277	13.683	LL6 CHONDRITE	B/C	A	27	23
DOM 14278	11.936	L6 CHONDRITE	B/C	A	22	19
DOM 14279	13.818	LL5 CHONDRITE	B/C	A/B	28	23
DOM 14289	3.420	LODRANITE	Ce	A/B	12-13	5-12
DOM 14300	218.71	L6 CHONDRITE	B	A	23	19
DOM 14301	211.53	H6 CHONDRITE	B	B	18	17
DOM 14302	150.64	LL6 CHONDRITE	Ce	A/B	27	23
DOM 14303	133.43	LL6 CHONDRITE	C	B	27	23
DOM 14304	160.89	LL5 CHONDRITE	B	A	27	23
DOM 14306	74.465	LL5 CHONDRITE	A/Be	A/B	27	23
DOM 14307	74.832	L5 CHONDRITE	B/C	A/B	21	19
DOM 14308	76.049	L6 CHONDRITE	B	A	23	20
DOM 14309	44.139	L6 CHONDRITE	B	A	23	19
DOM 14360	10.154	L6 CHONDRITE	Be	A	25	21
DOM 14361	11.825	L6 CHONDRITE	B/C	A	23	19
DOM 14362	15.354	L5 CHONDRITE	B/C	A	23	18
DOM 14363	10.956	L6 CHONDRITE	B/C	A	22	19
DOM 14364	13.367	H6 CHONDRITE	B/C	A	18	16
DOM 14365	14.304	L6 CHONDRITE	B/C	A	23	19
DOM 14366	8.923	L6 CHONDRITE	B/C	A	25	21
DOM 14367	8.000	L6 CHONDRITE	B/C	A	22	20
DOM 14369	13.469	L6 CHONDRITE	A/B	A	23	19
DOM 14376	23.992	L5 CHONDRITE	A/B	A	23	19
DOM 14377	28.960	H4 CHONDRITE	B/C	A	17	15
DOM 14378	33.377	L5 CHONDRITE	B	A	22	20
DOM 14379	19.894	H6 CHONDRITE	B/C	A	17	15
DOM 14390	26.660	L6 CHONDRITE	B	A	22	19
DOM 14391	36.120	L6 CHONDRITE	B/C	B	23	19
DOM 14392	26.520	L6 CHONDRITE	C	A/B	23	19
DOM 14393	27.090	L6 CHONDRITE	C	A	23	19
DOM 14394	44.720	L6 CHONDRITE	B/C	A/B	22	19
DOM 14395	22.530	H6 CHONDRITE	Ce	A/B	18	16
DOM 14396	31.640	H6 CHONDRITE	Ce	A/B	17	15
DOM 14397	26.480	L6 CHONDRITE	B	A	22	19
DOM 14398	31.110	L6 CHONDRITE	B	A	23	19
DOM 14399	60.930	L6 CHONDRITE	A/B	A/B	22	19
DOM 14450	21.440	L6 CHONDRITE	B	A	22	20
DOM 14451	9.030	H6 CHONDRITE	B/Ce	A	19	16
DOM 14452	11.990	H5 CHONDRITE	B/C	A/B	17	15
DOM 14453	7.080	H4 CHONDRITE	C	A	19	16
DOM 14454	10.760	H5 CHONDRITE	C	A	17	15
DOM 14455	9.920	L6 CHONDRITE	C	A/B	23	19
DOM 14456	9.190	L6 CHONDRITE	A/B	A	23	19
DOM 14457	7.110	L5 CHONDRITE	C	A/B	24	
DOM 14458	9.510	LL3.7 CHONDRITE	A/B	A	4-44	5-20
DOM 14459	3.740	H5 CHONDRITE	A/B	A	17	
DOM 14460	380.760	L5 CHONDRITE	B/Ce	A/B	23	19
DOM 14461	345.910	H4 CHONDRITE	Ce	B	17	15
DOM 14462	280.690	L6 CHONDRITE	A/B	A/B	23	19

Sample Number	Weight (g)	Classification	Weathering	Fracturing	%Fa	%Fs
DOM 14463	122.650	H5 CHONDRITE	C	A	17	15
DOM 14464	123.570	L4 CHONDRITE	Be	A	23	19
DOM 14465	96.570	H5 CHONDRITE	C	A/B	17	15
DOM 14466	82.150	H5 CHONDRITE	C	A/B	17	15
DOM 14467	68.810	L4 CHONDRITE	Be	A/B	23	19
DOM 14468	61.080	L5 CHONDRITE	B	A	23	19
DOM 14469	37.310	L4 CHONDRITE	B/Ce	A	23	19
DOM 14510	28.124	L6 CHONDRITE	A/B	A	23	19
DOM 14511	47.320	L5 CHONDRITE	A/B	A	22	19
DOM 14512	38.668	L5 CHONDRITE	B/C	A/B	22	19
DOM 14513	28.481	L6 CHONDRITE	A/B	A	22	19
DOM 14514	18.548	L6 CHONDRITE	A/B	A	23	19
DOM 14515	35.984	L6 CHONDRITE	B/Ce	A/B	23	19
DOM 14516	39.384	L6 CHONDRITE	B/C	A	23	19
DOM 14517	24.937	L5 CHONDRITE	B/C	A	22	19
DOM 14518	32.429	L6 CHONDRITE	A/B	A/B	22	19
DOM 14519	50.173	L6 CHONDRITE	A/Be	A/B	22	
DOM 14520	18.270	L6 CHONDRITE	B	A	23	19
DOM 14521	13.080	L6 CHONDRITE	B	A	23	19
DOM 14522	12.080	L6 CHONDRITE	C	A/B	23	19
DOM 14523	14.490	L4 CHONDRITE	B/Ce	A/B	23	11-21
DOM 14524	10.550	L6 CHONDRITE	A/B	A	22	19
DOM 14525	13.520	L6 CHONDRITE	Ce	A/B	23	19
DOM 14526	12.920	L6 CHONDRITE	B	A	22	19
DOM 14528	19.340	L5 CHONDRITE	B	A	22	19
DOM 14529	15.630	L6 CHONDRITE	B	A	22	19
DOM 14530	18.870	L6 CHONDRITE	A/B	A/B	22	19
DOM 14531	31.360	L6 CHONDRITE	B/C	A	22	19
DOM 14532	16.960	L5 CHONDRITE	B/Ce	A	22	19
DOM 14533	20.580	L6 CHONDRITE	C	A	22	19
DOM 14534	16.100	L5 CHONDRITE	C	A	22	19
DOM 14535	27.910	L5 CHONDRITE	C	A	23	19
DOM 14536	20.550	L5 CHONDRITE	Be	A	23	20
DOM 14537	26.090	L6 CHONDRITE	B/C	A	22	19
DOM 14538	25.120	L6 CHONDRITE	C	A/B	23	19
DOM 14539	49.540	H6 CHONDRITE	C	A	17	15
DOM 14550	15.720	L5 CHONDRITE	B/C	A	22	19
DOM 14551	11.290	L6 CHONDRITE	B	A	23	19
DOM 14552	7.800	L6 CHONDRITE	B	A	23	19
DOM 14553	13.470	H6 CHONDRITE	C	A	17	15
DOM 14554	14.750	L6 CHONDRITE	B	A	23	19
DOM 14555	5.990	L6 CHONDRITE	B	A	23	19
DOM 14556	18.130	L6 CHONDRITE	B	A	23	
DOM 14557	6.440	L6 CHONDRITE	B	A	23	19
DOM 14558	10.240	L6 CHONDRITE	B/C	A	22	20
DOM 14559	17.540	H6 CHONDRITE	C	A	18	16
MIL 15105	0.850	H4 CHONDRITE	B	A	20	8-20
MIL 15153	1.160	H6 CHONDRITE	C	B	17	15
MIL 15222	1.260	L5 CHONDRITE	B	B/C	22	19
MIL 15225	0.520	L6 CHONDRITE	B/C	A	23	20
MIL 15272	1.360	H6 CHONDRITE	C	B	16	15
MIL 15277	1.370	H5 CHONDRITE	B	B	16	15
MIL 15292	1.370	H6 CHONDRITE	Ce	A/B	17	15

Sample Number	Weight (g)	Classification	Weathering	Fracturing	%Fa	%Fs
EET 16045	105.047	IRON-IIIAB	A/B	A/B		
EET 16173	0.663	L5 CHONDRITE	B/C	A	23	19
EET 16197	0.498	L4 CHONDRITE	A/B	C	22	19
EET 16198	0.857	L5 CHONDRITE	A	B	23	19
EET 16200	0.338	L5 CHONDRITE	B	A	23	19
EET 16202	0.444	L6 CHONDRITE	C	B	23	19
EET 16204	1.080	L5 CHONDRITE	Be	B	22	19
EET 16205	0.456	H6 CHONDRITE	C	B	17	15
EET 16206	1.060	H6 CHONDRITE	C	A/B	17	15
EET 16207	0.835	L6 CHONDRITE	B	A	23	19
EET 16208	0.419	L6 CHONDRITE	Ae	A	25	21
EET 16209	0.628	H6 CHONDRITE	A/B	A	17	15
EET 16210	0.425	L6 CHONDRITE	B	A/B	22	19
EET 16211	0.651	H5 CHONDRITE	C	C	17	15
EET 16213	0.620	L5 CHONDRITE	A	A	23	20
EET 16214	1.037	H6 CHONDRITE	B	A	17	15
EET 16215	0.522	H6 CHONDRITE	C	B	17	15
EET 16216	0.672	H6 CHONDRITE	Be	A	17	15
EET 16217	0.813	H6 CHONDRITE	A/Be	A	17	15
EET 16218	1.071	H6 CHONDRITE	B	A	17	15
EET 16219	0.889	H6 CHONDRITE	B	A/B	17	15

Table 2
Newly Classified Meteorites Listed by Type

Achondrite

Sample Number	Weight(g)	Classification	Weathering	Fracturing	%Fa	%Fs
DOM 14289	3.420	LODRANITE	Ce	A/B	12-13	5-12

Iron

Sample Number	Weight(g)	Classification	Weathering	Fracturing	%Fa	%Fs
EET 16045	105.047	IRON-IIIAB	A/B	A/B		

L Type

Sample Number	Weight(g)	Classification	Weathering	Fracturing	%Fa	%Fs
DOM 14125	71.310	L CHONDRITE (IMPACT MELT)	C	B/C	13-42	12-25
DOM 14124	58.550	L3.5 CHONDRITE	B/C	A	0-48	16-24
DOM 14082	9.290	L3.6 CHONDRITE	B/C	A	0-34	5-19
DOM 14201	16.800	L3.6 CHONDRITE	Be	A	1-30	2-24
DOM 14225	71.004	L3.8 CHONDRITE	B/Ce	A/B	18-27	6-28

LL Type

Sample Number	Weight(g)	Classification	Weathering	Fracturing	%Fa	%Fs
DOM 14183	20.260	LL3.7 CHONDRITE	A	A/B	15-31	5-26
DOM 14458	9.510	LL3.7 CHONDRITE	A/B	A	4-44	5-20

**Notes to Tables 1 and 2:

"Weathering" Categories:

A: Minor rustiness; rust haloes on metal particles and rust stains along fractures are minor.
B: Moderate rustiness; large rust haloes occur on metal particles and rust stains on internal fractures are extensive.
C: Severe rustiness; metal particles have been mostly stained by rust throughout.
E: Evaporite minerals visible to the naked eye.

"Fracturing" Categories:

A: Minor cracks; few or no cracks are conspicuous to the naked eye and no cracks penetrate the entire specimen.
B: Moderate cracks; several cracks extend across exterior surfaces and the specimen can be readily broken along the cracks.
C: Severe cracks; specimen readily crumbles along cracks that are both extensive and abundant.

Classification of the ordinary chondrites in Table 1 & 2 was done by Energy Dispersive Spectroscopic (EDS) methods using a Scanning Electron Microscope (SEM). This can include the analysis of several olivine and pyroxene grains to determine the approximate Fayalite and Ferrosilite values of the silicates, grouping them into H, L or LL chondrites. Petrologic types are determined by optical microscopy and are assigned based on the distinctiveness of chondrule boundaries on broken surfaces of a 1-3 g chip. While this technique is suitable for general characterization and delineation of equilibrated ordinary chondrites, those undertaking detailed study of any meteorite classified by optical methods alone should use caution. It is recommended that a polished thin section be requested to accompany any chip and appropriate steps for a more

Table 3

Tentative Pairings for New Meteorites

Table 3 summarizes possible pairings of the new specimens with each other and with previously classified specimens based on descriptive data in this newsletter issue. Readers who desire a more comprehensive review of the meteorite pairings in the U.S. Antarctic collection should refer to the compilation provided by Dr. E.R. D. Scott, as published in the Antarctic Meteorite Newsletter vol. 9 (no. 2) (June 1986). Possible pairings were updated in Meteoritical Bulletins 76, 79, 82 through 106, which are available online from the Meteoritical Society webpage:

http://www.lpi.usra.edu/meteor/metbull.php

LL3.7 CHONDRITE

DOM 14458 with DOM 14183

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
DOM 14082	Dominion Range	22520	2.1 x 2.1 x 1.1	9.290	L3.6 Chondrite

Macroscopic Description: Rachel Funk

The exterior surface has 45% black, vesicular fusion crust with orange and brown rust. The interior is a black matrix with beige inclusions/chondrules and orange rust.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy

The section exhibits numerous large (up to 2 mm), well-defined chondrules in a black matrix of fine-grained silicates, metal and troilite. Polysynthetically twinned pyroxene is present. The meteorite is extensively weathered. Silicates are unequilibrated; olivines range from Fa_{0-34} and pyroxenes from Fs_{5-19}. The meteorite is an L3 chondrite (estimated subtype 3.6).

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
DOM 14124	Dominion Range	21624	5.0 x 3.5 x 2.1	58.55	L3.5 Chondrite

Macroscopic Description: Rachel Funk

95% black fusion crust with red and orange rust halos covers the exterior surface. The interior is a black matrix with gray inclusions/chondrules. There are minor amounts of orange rust inside of the matrix.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy

The section exhibits numerous small (up to 1.5 mm), well-defined chondrules in a black matrix of fine-grained silicates, metal and troilite. Polysynthetically twinned pyroxene is abundant. The meteorite is moderately weathered. Silicates are unequilibrated; olivines range from Fa_{0-48} and pyroxenes from Fs_{16-24}. The meteorite is an L3 chondrite (estimated subtype 3.5).

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
DOM 14125	Dominion Range	21626	4.1 x 3.0 x 3.0	71.31	L Chondrite (Impact Melt)

Macroscopic Description: Rachel Funk

This exterior of this fractured meteorite has 30% brown fusion crust. The exposed surface is brown with red/orange rust. The interior is a black/brown matrix full of orange rust and metal.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy

This section is dominated by fine grained, equigranular impact melt (dominantly olivine), with unmelted clastic material up to 2 mm. On one edge of the section, the impact melt has quenched to a glass adjacent to one of these unmelted clasts. Rounded to ovoid droplets exhibit intergrowths of metal and sulfide. In some locations, metal seems to be preferentially located at one edge of the inclusion, suggestive of gravitational orientation. Olivine compositions are Fa_{13-42} and pyroxenes from Fs_{12-25}. This meteorite is an ordinary chondrite impact melt breccia, possibly an L chondrite.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
DOM 14183	Dominion Range	23844	2.4 x 2.6 x 2.0	20.26	LL3.7 Chondrite
DOM 14458		22798	2.0 x 2.0 x 1.4	9.510	

Macroscopic Description: Rachel Funk

Black fusion crust is present on both of the samples exterior surface. Some oxidation and rusty spots are visible. The exposed surface is dark gray to black with some oxidation. The interiors are gray/black matrix with light, dark and weathered chondrules/clasts. Minor oxidation is present.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy

The section exhibits numerous large (up to 2 mm), well-defined chondrules in a black matrix of fine-grained silicates, metal and troilite. Polysynthetically twinned pyroxene is present. The meteorite is modestly weathered. Silicates are unequilibrated; olivines range from Fa_{4-44} and pyroxenes from Fs_{5-26}. The meteorites are LL3 chondrites (estimated subtype 3.7).

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
DOM 14201	Dominion Range	21603	2.0 x 2.5 x 1.5	16.8	L3.6 Chondrite

Macroscopic Description: Rachel Funk

98% of exterior is covered with a vesicular, black fusion crust. The interior is a black matrix with gray and beige chondrules and evaporites.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy

The section exhibits numerous large (up to 2 mm), well-defined chondrules in a black matrix of fine-grained silicates, metal and troilite. Polysynthetically twinned pyroxene is present. The meteorite is moderately weathered. Silicates are unequilibrated; olivines range from Fa_{1-30} and pyroxenes from Fs_{2-24}. The meteorite is an L3 chondrite (estimated subtype 3.6).

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
DOM 14225	Dominion Range	23802	4.5 x 3.2 x 2.5	71.00	L3.8 Chondrite

Macroscopic Description: Cecilia Satterwhite

Exterior surface has 90% black/brown fusion crust with oxidation halos and rust. The interior is medium gray matrix with heavy oxidation in areas. Abundant mm sized inclusions/chondrules and metal are present.

Thin Section (,2) Description: Cari Corrigan, Tim McCoy

The section exhibits numerous small (up to 1.5 mm), well-defined chondrules in a black matrix of fine-grained silicates, metal and troilite. Polysynthetically twinned pyroxene is abundant. The meteorite is moderately weathered. Silicates are unequilibrated; olivines range from Fa_{18-27} and pyroxenes from Fs_{6-28}. The meteorite is an L3 chondrite (estimated subtype 3.8).

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
DOM 14289	Dominion Range	23566	1.5 x 2.0 x 1.0	3.420	Lodranite

Macroscopic Description: Rachel Funk

Exterior has 98% black fusion crust with red and yellow rust and minor evaporites. The black and brown interior is full of metal and rust.

Thin Section (,2) and thick section (,4) Description: Cari Corrigan, Tim McCoy

This meteorite was examined in a thin section (,2) which contained only silicate material and a thick section (,4) dominated by metal with minor silicates and chromite. As a whole, the meteorite is metal dominated. Silicates are coarse grained, with individual grains reaching up to 3 mm. Pyroxenes exhibit approximately 2 micron scale striations of high birefringence. Chromites reach up to 1.4 mm. The metal exhibits partial swathing kamacite adjacent to silicates and chromite with plessite dominating most of the section. Metal and sulfide inclusions occur within the chromites. Compositionally, olivines are Fa_{12-13} and pyroxenes are Fs_5Wo_{42-46} and $Fs_{12}Wo_1$. The compositions and texture suggest grouping with the lodranites. However, the metal rich nature of the sample is reminiscent of QUE 93148, which was also originally classified as a lodranite, but may be related to the HEDs or pyroxene pallasites.

Sample No.	Location	Field No.	Dimensions (cm)	Weight (g)	Classification
EET 16045	Elephant Moraine	24612	5.0 x 3.2 x 2.0	105.050	Iron-IIIAB

Macroscopic Description: Cari Corrigan, Tim McCoy

This iron meteorite appears to be ~2/3 of an oriented mass with a strongly convex upper surface and strongly concave lower surface. The original meteorite was probably ~5 cm in diameter (but is currently 2 x 3 x 4.5 cm). The broken surface exhibits angular protrusions that appear to approximate angles in the Widmanstätten pattern, and a prominent 3 mm thick fusion crust is evident on margins of the broken surface. This meteorite has a weathering grade of A/B.

Thin Section (,3) Description: Cari Corrigan, Tim McCoy

A section through the center of the mass exhibits a Widmanstätten pattern with kamacite lamellae of width ~1.4 mm. Kamacite exhibits sub-grain boundaries and α^2 structure throughout the section. Taenite of ~100 microns in width exhibits compositional zoning. Coarse comb plessite occurs in the section. Fusion crust is present on one edge of the section reaching 1.6 mm and, in places, exhibits a layered structure. A compositional traverse across the section yielded 8.3 wt. % Ni and 0.12 wt. % P. The structure and composition are consistent with a IIIAB iron.

Grosvenor Mountains 85 and 03 Sample Reclassifications

Sample	M_0 (10^{-3})	Mass (g)	Log χ (10^{-9} m^3/kg)	AMN classification	New classification
GRO 85203	226	999.67	5.07	H5	-
GRO 03001	240	29895	5	L5	H5
GRO 03002	154	27995.21	4.8	L5	H5
GRO 03003	219	10625	4.96	L5	H5
GRO 03004	148.5	2406.1	4.81	L5	H5
GRO 03005	86.55	2489.3	4.57	L5	-
GRO 03006	179	1099	4.96	L5	H5
GRO 03008	157.5	1674.1	4.87	L5	H5
GRO 03009	187.5	1095.7	4.98	L5	H5
GRO 03010	163	1292.9	4.91	L5	H5
GRO 03011	249	1253.9	5.09	L5	H5
GRO 03012	205.5	1138.4	5.02	L5	H5
GRO 03013	145	1030	4.87	L5	H5
GRO 03014	185.5	1105	4.98	L5	H5
GRO 03016	186	905.5	4.99	L5	H5
GRO 03017	116.5	194.9	4.93	LL5	H5
GRO 03018	198	1414.6	4.98	L5	H5
GRO 03019	222	1240	5.04	L5	H5
GRO 03020	206.5	550	5.08	L5	H5
GRO 03021	215	603.5	5.09	L5	H5
GRO 03022	171	613.2	4.99	H5	-
GRO 03023	201	878.3	5.03	L5	H5
GRO 03024	166.5	639.5	4.98	L5	H5
GRO 03025	158	592.195	4.96	L5	H5
GRO 03026	123.5	557.7	4.86	L5	H5
GRO 03027	111.5	76.9	5.07	L5	H5
GRO 03028	225	439.4	5.14	L5	H5
GRO 03029	217	513.7	5.11	L5	H5
GRO 03030	182	872.4	4.99	L5	H5
GRO 03031	324	766.5	5.25	L5	H5
GRO 03033	189	330	5.09	L5	H5
GRO 03035	172	354.9	5.04	L5	H5
GRO 03036	74.35	334	4.69	L5	-
GRO 03037	150.5	527.2	4.95	L5	H5
GRO 03038	152.5	387.5	4.98	L5	H5
GRO 03039	159.5	382.9	5	L5	H5
GRO 03041	82.4	111.601	4.85	L5	H5
GRO 03042	202	285.7	5.13	L5	H5
GRO 03043	116.95	271.4	4.9	L5	H5
GRO 03044	128	181.64	4.92	L5	H5
GRO 03045	147.5	213.613	5.03	L5	H5
GRO 03047	167	278.3	5.05	L5	H5
GRO 03048	172	391.2	5.03	L5	H5
GRO 03049	132.5	307.9	4.94	L5	H5
GRO 03050	207.5	234.4	5.17	L5	H5
GRO 03051	161	157.25	5.06	H5	-
GRO 03054	79.3	58.9	4.98	LL5	H5
GRO 03056	159	419.6	4.99	H5	-
GRO 03057	163.5	657.6	4.97	L5	H5
GRO 03058	197.5	417.4	5.09	L5	H5
GRO 03059	182	614.1	5.02	L5	H5
GRO 03060	234	343.2	5.18	L5	H5
GRO 03062	172.5	431.708	5.03	L5	H5
GRO 03065	159.5	301.3	5.03	L5	H5
GRO 03068	163	284.2	5.04	L5	H5

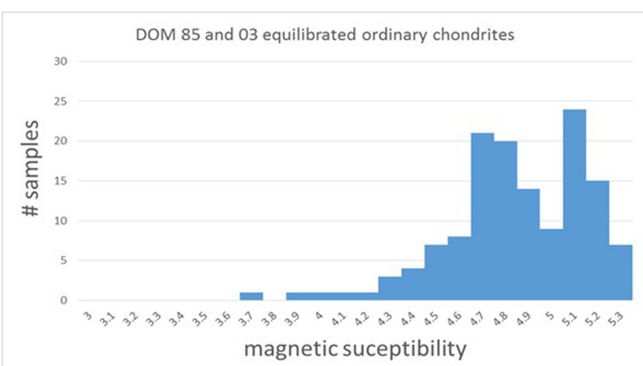
Sample	M_0 (10^{-3})	Mass (g)	Log χ(10^{-9} m^3/kg)	AMN classification	New classification
GRO 03069	165.5	217.3	5.07	L5	H5
GRO 03071	135.5	253.9	4.97	L5	H5
GRO 03072	133	153.99	4.98	L5	H5
GRO 03073	96.1	144.514	4.85	L5	H5
GRO 03074	130.5	243.3	4.96	LL5	H5
GRO 03077	135	197.6	5	L5	H5
GRO 03080	124	133.73	4.98	L5	H5
GRO 03081	109.25	209.978	4.9	L5	H5
GRO 03082	124.5	169.549	4.93	L5	H5
GRO 03083	95.3	129.699	4.87	LL5	H5
GRO 03089	158	143.2	5.07	H5	-
GRO 03090	131	122.3	5.03	L5	H5
GRO 03091	103	237.2	4.86	L5	H5
GRO 03092	30.6	11.8	5.08	L5	H5
GRO 03093	77.2	67.45	4.94	L5	H5
GRO 03094	83.2	68.8	4.97	LL5	H5
GRO 03095	86.75	93.297	4.91	H6	-
GRO 03096	110	119.7	4.96	L5	H5
GRO 03097	134.5	93.6	5.1	L5	H5
GRO 03098	66.85	39.6	5	L5	H5
GRO 03099	163	202	5.08	H5	-
GRO 03100	96.15	52.3	5.1	L5	H5
GRO 03101	119.5	70.4	5.12	L5	H5
GRO 03102	107	101.8	4.98	L5	H5
GRO 03103	133	156.3	4.97	H5	-
GRO 03104	77.9	91.638	4.87	H5	-
GRO 03106	114.5	105.7	5	L5	H5
GRO 03109	44.1	23.3	4.98	L5	H5
GRO 03117	100.8	57.4	5.09	L5	H5
GRO 03118	51.25	42.8	4.87	L5	H5
GRO 03119	50.6	33.4	4.92	L5	H5
GRO 03120	154.5	100.354	5.15	H5	-
GRO 03121	89.05	80.839	4.96	H5	-
GRO 03122	67.65	46.766	4.97	L5	H5
GRO 03123	108	57	5.13	L5	H5
GRO 03162	17.8	7.2	5.03	L5	H5
GRO 03165	36.95	17.6	5.01	L5	H5

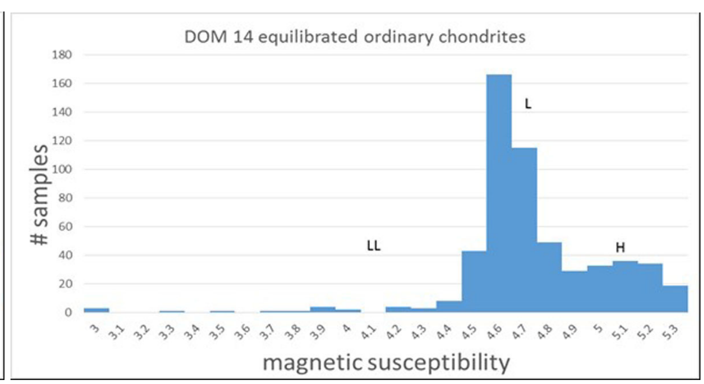
Dominion Range 85 and 03 Sample Reclassifications

Sample	M_0 (10^{-3})	Mass (g)	Log χ (10^{-9} m^3/kg)	AMN classification	New classification
DOM 03180	166.5	148.4	5.08	H5	-
DOM 03184	0.502	0.7	4.37	LL5	-
DOM 03185	111	745.1	4.79	LL5	L5
DOM 03186	280	1374.5	5.14	L5	H5
DOM 03187	107.6	800.9	4.77	LL5	L5
DOM 03188	177	586.3	5.01	L5	H5
DOM 03189	121.5	991.6	4.8	L5	-
DOM 03190	113	455	4.84	L5	-
DOM 03191	224	550.8	5.12	H5	-
DOM 03192	377.5	217.8	5.43	L5	H5
DOM 03193	128	275.7	4.94	H5	-
DOM 03195	42.35	154.232	4.48	LL6	-
DOM 03196	72.8	89.5	4.85	LL6	L6
DOM 03197	42.95	131.8	4.52	LL5	L5
DOM 03198	68.75	250.5	4.68	LL5	L5
DOM 03199	50.1	99.3	4.66	H5	L5
DOM 03200	64.15	134.154	4.69	L5	-
DOM 03202	105.5	89.6	5.01	L5	H5
DOM 03203	40.35	65.6	4.66	L5	-
DOM 03204	84.95	63.6	4.99	L5	H5
DOM 03205	80.25	38	5.09	H5	-
DOM 03207	60.6	39.1	4.96	H5	-
DOM 03208	140.5	84.9	5.14	LL5	H5
DOM 03209	86	48.3	5.07	H5	-
DOM 03210	61.35	30.8	5.02	L5	H5
DOM 03211	36.65	52.7	4.67	L5	-
DOM 03212	50.9	18.5	5.13	L5	H5
DOM 03213	13.65	26.1	4.43	LL5	-
DOM 03214	45.4	29.887	4.9	H5	-
DOM 03215	10	3.2	5.09	H5	-
DOM 03216	26.5	6.1	5.27	H5	-
DOM 03217	2.585	14	3.94	LL5	-
DOM 03218	43	17.1	5.09	H5	-
DOM 03220	109	29.5	5.28	H6	-
DOM 03221	67.8	32.7	5.06	H5	-
DOM 03222	39.25	13.5	5.14	H6	-
DOM 03223	1	2.2	4.23	LL4	-
DOM 03224	10.03	2.4	5.2	L5	H5
DOM 03225	13.95	4	5.15	L5	H5
DOM 03226	10.1	2.8	5.15	L5	H5
DOM 03227	0.349	1.7	3.88	LL5	-
DOM 03228	0.65	2.1	4.07	LL5	-
DOM 03229	6.755	1.8	5.14	L5	H5
DOM 03230	0.1895	1.7	3.61	LL5	-
DOM 03231	0.798	2	4.17	LL6	-
DOM 03232	9.37	2.4	5.17	L4	H4
DOM 03233	3.655	3.2	4.65	L5	-
DOM 03234	10.7	9.5	4.71	L5	-
DOM 03235	46.35	18.2	5.1	H4	-
DOM 03236	17	5.5	5.12	H5	-
DOM 03237	110.85	69.8	5.09	H6	-
DOM 03239	29.35	57.204	4.56	L6	-
DOM 03240	98.6	277.7	4.83	LL5	L5
DOM 03241	23.55	67.5	4.42	LL6	-
DOM 03242	88.5	55.232	5.05	H5	-

Sample	M_0 (10^{-3})	Mass (g)	Log χ (10^{-9} m^3/kg)	AMN classification	New classification
DOM 03243	35.6	41.7	4.72	H5	L5
DOM 03244	130.5	82.3	5.12	LL5	H5
DOM 03245	71.35	216.6	4.71	LL5	L5
DOM 03246	66.4	39.7	5	L5	H5
DOM 03247	115.5	87.3	5.05	H5	-
DOM 03248	137.5	47	5.28	LL5	H5
DOM 03249	6.605	14.92	4.32	LL5	-
DOM 03250	60	465.1	4.56	LL5	L5
DOM 03251	438	631.2	5.4	LL5	H5
DOM 03252	98.55	351.2	4.8	H6	L6
DOM 03253	477	1130.4	5.38	H5	-
DOM 03254	112	484.7	4.83	LL5	L5
DOM 03255	192.5	341.4	5.1	L5	H5
DOM 03256	234	213.9	5.23	L5	H5
DOM 03257	94.4	277.2	4.81	LL5	L5
DOM 03258	385	342.4	5.4	LL5	H5
DOM 03259	37.8	179	4.4	LL6	-
DOM 03260	185	183.6	5.08	LL5	H5
DOM 03261	115	173	4.89	LL5	L5
DOM 03262	38.5	92.3	4.56	LL5	L5
DOM 03263	33.85	69.5	4.57	LL6	L6
DOM 03264	38.2	36.2	4.78	L5	-
DOM 03265	29.25	58.828	4.55	LL5	L5
DOM 03266	90.15	40.9	5.13	L5	H5
DOM 03267	37.5	43.3	4.73	LL5	L5
DOM 03268	21.9	24.7	4.65	LL5	L5
DOM 03269	31.35	39	4.68	LL5	L5
DOM 03270	15.75	19	4.61	LL5	L5
DOM 03271	61.75	19.6	5.19	LL5	H5
DOM 03272	42.4	72.843	4.66	LL5	L5
DOM 03273	27.65	22.6	4.79	LL5	L5
DOM 03274	20.85	26.086	4.61	LL5	L5
DOM 03275	11.75	10.5	4.71	LL5	L5
DOM 03276	5.69	13.396	4.3	LL5	-
DOM 03277	8.825	7.7	4.7	LL5	L5
DOM 03278	21.3	23.2	4.67	LL5	L5
DOM 03279	23.9	20.6	4.76	LL5	L5
DOM 03280	38.55	31.3	4.82	LL6	L5
DOM 03281	3.215	3	4.62	LL6	L6
DOM 03282	4.52	4.4	4.63	LL5	L5
DOM 03283	6.575	6.3	4.65	L6	-
DOM 03284	4.72	4.1	4.67	L5	-
DOM 03285	22.1	11	4.97	L6	H6
DOM 03286	7.02	3.4	4.91	H5	-
DOM 03288	25.7	16.8	4.87	L6	-
DOM 03289	87.85	59.9	5.02	H5	-
DOM 03290	7.915	12.259	4.48	L5	-
DOM 03291	51.7	40.61	4.89	L5	-
DOM 03292	43.6	20.6	5.02	H5	-
DOM 03293	15.4	16.3	4.66	LL5	L5
DOM 03294	27.5	18.7	4.86	L5	-
DOM 03295	8.78	7.6	4.71	L5	-
DOM 03296	55.7	22.9	5.09	L5	H5
DOM 03297	7.235	5.2	4.77	LL6	L6
DOM 03298	6.895	4.8	4.78	L6	-
DOM 03299	34.55	13.1	5.09	L5	H5

Sample	M_0 (10^{-3})	Mass (g)	Log χ (10^{-9} m^3/kg)	AMN classification	New classification
DOM 03300	4.705	3.6	4.72	L5	-
DOM 03301	4.575	3.9	4.68	L5	-
DOM 03302	1.995	2	4.57	L5	-
DOM 03303	5.705	4.1	4.75	LL5	L5
DOM 03304	9.275	6.6	4.78	L5	-
DOM 03305	6.99	11.043	4.46	LL5	-
DOM 03306	9.31	2.9	5.1	H4	-
DOM 03307	4.72	3.7	4.71	L5	-
DOM 03308	39.9	20.7	4.98	LL5	H5
DOM 03309	52.9	22.7	5.07	H5	-
DOM 03310	5.48	3.6	4.79	LL5	L5
DOM 03311	12.45	12.5	4.67	LL5	L5
DOM 03312	12.45	4.5	5.06	H5	-
DOM 03313	11.05	5.1	4.96	H5	-
DOM 03314	8.95	2.6	5.12	L5	H5
DOM 03315	7.26	5.5	4.75	LL5	L5
DOM 03317	8.435	4.2	4.91	L5	-
DOM 03318	176.5	2932.5	4.87	H5	L5
DOM 03319	573.5	3397.7	5.38	L5	H5
DOM 03320	92.5	2174.1	4.62	L5	-
DOM 85500	112	53.795	5.16	H5	-
DOM 85501	67.6	29.9	5.07	H5	-
DOM 85502	39.75	229.45	4.45	L6	-
DOM 85503	50.6	579.4	4.47	L6	-
DOM 85504	36.2	90.61	4.54	L4	-
DOM 85505	0.74	1.6	4.23	LL5	-
DOM 85506	0.6805	1.5	4.21	LL5	-
DOM 85507	90.55	79.7	4.97	H5	-
DOM 85508	13.2	2.6	5.29	H6	-
DOM 85509	12.1	14.4	4.6	L6	-
DOM 85510	48.05	13.3	5.23	L6	H6





Sample Request Guidelines

The Meteorite Working Group (MWG), is a peer-review committee which meets twice a year to guide the collection, curation, allocation, and distribution of the U.S. collection of Antarctic meteorites. The deadline for submitting a request is 2 weeks prior to the scheduled meeting.

Requests that are received by the MWG secretary by **March 08, 2018 deadline** will be reviewed at the MWG meeting on **Mar. 23-24 in Houston, Tx.** Requests that are received after the deadline may be delayed for review until MWG meets again in the Fall of 2018. Please submit your requests on time. Questions pertaining to sample requests can be directed to the MWG secretary by e-mail, fax or phone.

Requests for samples are welcomed from research scientists of all countries, regardless of their current state of funding for meteorite studies. Graduate student requests should have a supervising scientist listed to confirm access to facilities for analysis. All sample requests will be reviewed in a timely manner. Sample requests that do not meet the curatorial allocation guidelines will be reviewed by the Meteorite Working Group (MWG). Issuance of samples does not imply a commitment by any agency to fund the proposed research. Requests for financial support must be submitted separately to an appropriate funding agency. As a matter of policy, U.S. Antarctic meteorites are the property of the National Science Foundation, and all allocations are subject to recall.

Samples can be requested from any meteorite that has been made available through announcement in any issue of the ***Antarctic Meteorite Newsletter*** (beginning with 1(1) in June, 1978). Many of the meteorites have also been described in five *Smithsonian Contributions to the Earth Sciences*: Nos. 23, 24, 26, 28, and 30. Tables containing all classified meteorites as of August 2006 have been published in the Meteoritical Bulletins and *Meteoritics* and *Meteoritics and Planetary Science.*

They are also available online at:

http://www.meteoriticalsociety.org/simple_template.cfm?code=pub_bulletin

The most current listing is found online at:

http://curator.jsc.nasa.gov/antmet/us_clctn.cfm

All sample requests should be made electronically using the form at:

http://curator.jsc.nasa.gov/antmet/requests.cfm

The purpose of the sample request form is to obtain all information MWG needs prior to their deliberations to make an informed decision on the request. Please use this form if possible.

The preferred method of request transmittal is via e-mail. Please send requests and attachments to:

JSC-ARES-MeteoriteRequest@nasa.gov

Type **MWG Request** in the e-mail subject line. Please note that the form has signature blocks. The signature blocks should only be used if the form is sent via Fax or mail.

Each request should accurately refer to meteorite samples by their respective identification numbers and should provide detailed scientific justification for proposed research. Specific requirements for samples, such as sizes or weights, particular locations (if applicable) within individual specimens, or special handling or shipping procedures should be explained in each request. Some meteorites are small, of rare type, or are considered special because of unusual properties. Therefore, it is very important that all requests specify both the optimum amount of material needed for the study and the minimum amount of material that can be used. Requests for thin sections that will be used in destructive procedures such as ion probe, laser ablation, etch, or repolishing must be stated explicitly.

Consortium requests should list the members in the consortium. All necessary information should be typed on the electronic form, although informative attachments (reprints of publication that explain rationale, flow diagrams for analyses, etc.) are welcome.

Antarctic Meteorite Laboratory Contact Numbers

Please submit request to: **JSC-ARES-MeteoriteRequest@nasa.gov**

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Meteorites On-Line

Several meteorite web sites are available to provide information on meteorites from Antarctica and elsewhere in the world. Some specialize in information on martian meteorites and on possible life on Mars. Here is a general listing of ones we have found. We have not included sites focused on selling meteorites even though some of them have general information. Please contribute information on other sites so we can update the list.

JSC Curator, Antarctic meteorites	http://curator.jsc.nasa.gov/antmet/
JSC Curator, HED Compendium	http://curator.jsc.nasa.gov/antmet/hed/
JSC Curator, Lunar Meteorite Compendium	http://curator.jsc.nasa.gov/antmet/lmc/
JSC Curator, Mars Meteorite Compendium	http://curator.jsc.nasa.gov/antmet/mmc/
ANSMET	http://caslabs.case.edu/ansmet/
Smithsonian Institution	http://mineralsciences.si.edu/
Lunar Planetary Institute	http://www.lpi.usra.edu
NIPR Antarctic meteorites	http://www.nipr.ac.jp/
Meteoritical Bulletin online Database	http://www.lpi.usra.edu/meteor/metbull.php
Museo Nazionale dell'Antartide	http://www.mna.it/collezioni/catalogo-meteoriti-sede-di-siena
BMNH general meteorites	http://www.nhm.ac.uk/our-science/departments-and-staff/earth-sciences/mineral-and-planetary-sciences.html
Chinese Antarctic meteorite collection	http://birds.chinare.org.cn/en/resourceList/
UHI planetary science discoveries	http://www.psrd.hawaii.edu/index.html
Meteoritical Society	http://www.meteoriticalsociety.org/
Meteoritics and Planetary Science	http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1945-5100
Meteorite! Magazine	http://www.meteoritemag.org/
Geochemical Society	http://www.geochemsoc.org
Washington Univ. Lunar Meteorite	http://meteorites.wustl.edu/lunar/moon_meteorites.htm
Washington Univ. "meteor-wrong"	http://meteorites.wustl.edu/meteorwrongs/meteorwrongs.htm
Portland State Univ. Meteorite Lab	http://meteorites.pdx.edu/
Northern Arizona University	http://www4.nau.edu/meteorite/
Martian Meteorites	http://www.imca.cc/mars/martian-meteorites.htm

Other Websites of Interest

OSIRIS-REx	http://osiris-rex.lpl.arizona.edu/
Mars Exploration	http://mars.jpl.nasa.gov
Rovers	http://marsrovers.jpl.nasa.gov/home/
Near Earth Asteroid Rendezvous	http://near.jhuapl.edu/
Stardust Mission	http://stardust.jpl.nasa.gov
Genesis Mission	http://genesismission.jpl.nasa.gov
ARES	http://ares.jsc.nasa.gov/
Astromaterials Curation	http://curator.jsc.nasa.gov/