KEEPING UP WITH THE LUNAR METEORITES – 2014. R. L. Korotev[1] and A. J. Irving[2], [1]Dept. of Earth & Planetary Sciences and McDonnell Center for the Space Sciences, Washington University, St. Louis MO 63130, korotev@wustl.edu; [2]Dept. of Earth & Space Sciences, University of Washington, Seattle, WA 98195.

Since our abstract of last year [1], twelve new lunar meteorite stones with a total mass of 3412 g have been announced and described in the Meteoritical Bulletin [2]. One is from Oman and eleven from northwestern Africa, and all but one is a feldspathic breccia (Fig. 1). We obtained the compositional data presented here on multiple subsamples of each stone by instrumental neutron activation analysis using methods described in [3].

Dhofar 1766 (292 g) is a feldspathic impact-melt breccia compositionally very similar to, and likely paired with, Dhofar 733 (Fig. 2). Both have concentrations of Na and Eu about twice the levels typical of feldspathic lunar meteorites. More details in [4].

NWA 7834 and 7948 (905 g and 59.8 g) are feldspathic regolith breccias containing some mare basalt, leading to moderate concentrations of Fe and Sc. Both were purportedly found in Mauritania, and they are compositionally similar to each other (Fig. 2), thus we suspect that they are paired stones. **NWA 7931** (5.9 g) is a feldspathic regolith breccia but with lower concentrations of incompatible elements than most others of similar FeO concentration. With only 3.3% FeO, **NWA 7959** (156 g) is a highly feldspathic regolith breccia, but with 1.2 ppm Sm one that is richer in incompatible elements than most other similarly feldspathic meteorites (Fig. 1). It has high concentrations of terrestrial Br (2.8 ± 0.4 ppm) and Ba (1800 ppm). **NWA 7986** (12.2 g) is another stone of the pair group including NWA 4936, 5406, 6221, 6355, 6470, 6570, and 7190 [3], which is compositionally similar to Apollo 16 soils. The total mass of the meteorite is now 1949 g. **NWA 8001** (23.4 g) is a feldspathic regolith breccia that, with 3.6 ppm Sm, is compositionally distinct from any others (Fig. 2). More details are given in [5]. **NWA 8010** (58 g) is a glassy, vesicular, feldspathic regolith breccia with moderately high concentrations of incompatible elements (Fig. 2). It has a Zn concentration of 380 ± 140 ppm, which is ~20 greater than typically found in lunar regolith breccias, and also contains high Ag (3 ± 2 ppm). Both values suggest terrestrial contamination, but we have not seen this much Zn contamination in any other of the ~80 NWA lunar meteorite stones that we have analyzed. It also has one of the highest concentrations of terrestrial Br that we have seen in a lunar meteorite (3.3 ± 0.8 ppm). **NWA 802**2 (1226 g) is a highly feldspathic granulitic breccia (see [5] for more details). Although on Fig. 1 it plots with NWA 7959, it is distinctly richer in Na, Eu, and siderophile elements. **NWA 8046** (47.3 g) is a rather typical feldspathic lunar meteorite but one that is not a compositional match to any others. **NWA 8055** (97 g) is a fragmental specimen with a composition consistent with a mare-basalt-bearing feldspathic breccia.

NWA 8127 (529 g) is another stone of the NWA 773 clan of mafic lunar meteorites (NWA 773, 2700, 2727, 2977, 3160, 3170, 3333, 6950, and Anoual). Like NWA 2700 and NWA 6950, it consists entirely of the olivine gabbro cumulate lithology.

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References: [1] Korotev R. L. and Irving A. J. (2013) LPSC44, #1216. [2] http://www.lpi.usra.edu/meteor/metbull.php. [3] Korotev R. L. (2012) *M&PS* **47**, 1365–1402. [4] Wittmann A. and Korotev R. L. (2014) This conf. [5] Kuehner S. M. et al. (2014) This conf.

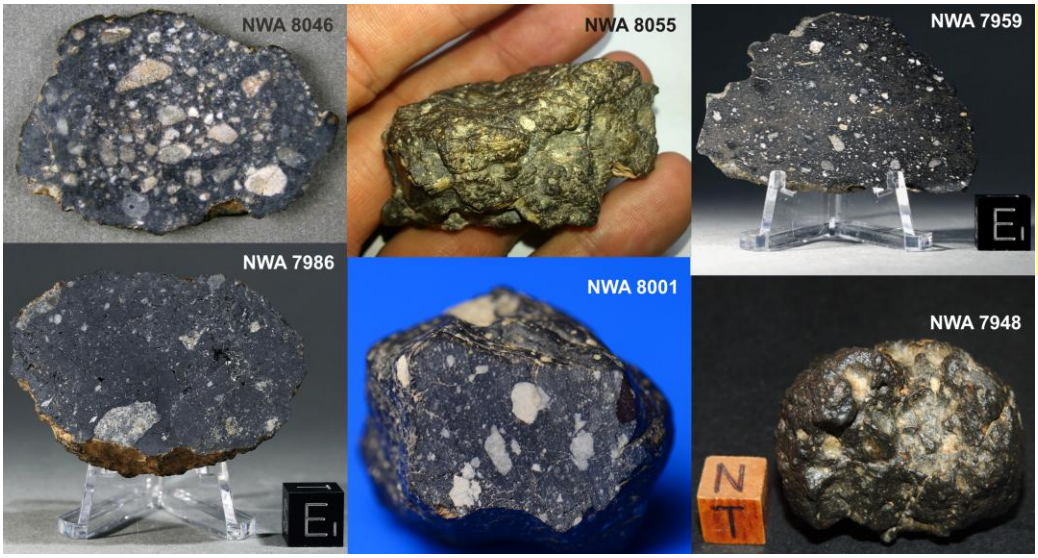

Figure 1. Images of some feldspathic lunar breccia specimens: NWA 7948, NWA 7959, NWA 7986, NWA 8001, NWA 8046, and NWA 8055 (photos by R. Chaoui, S. Ralew, D. Pitt, R. Falls and A. Aaronson).

Table 1. Preliminary results of INAA.

Stone	Na_2O	Sc	Cr	FeO	Co	Ni	Sr	Ba	La	Sm	Eu	Yb	Lu	Ir	Au	Th	mass
	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	mg
Dho 1766	0.68	4.6	430	2.9	8	40	2090	290	1.2	0.5	1.49	0.4	0.06	1	<2	0.1	356
NWA 7834	0.40	19.5	1600	9.9	38	230	160	260	8.0	3.6	0.96	2.5	0.35	6	2	1.1	326
NWA 7931	0.34	18.4	1190	7.6	28	300	120	200	3.9	1.9	0.76	1.5	0.22	12	6	0.6	158
NWA 7948	0.40	17.7	1600	9.5	38	200	180	180	6.9	3.3	0.92	2.2	0.33	5	2	1.0	233
NWA 7959	0.33	5.3	460	3.3	19	210	220	1790	2.7	1.2	0.78	0.8	0.11	8	4	0.4	124
NWA 7986	0.51	9.1	740	5.7	31	430	180	180	13.3	6.2	1.41	4.0	0.55	10	10	1.9	104
NWA 8001	0.39	9.0	660	4.8	22	280	270	530	7.6	3.6	0.95	2.5	0.35	10	4	1.3	243
NWA 8010	0.48	11.3	860	5.9	37	380	250	1030	14.4	6.6	1.12	4.4	0.62	7	6	2.2	223
NWA 8022	0.46	5.3	480	3.7	32	520	180	60	2.7	1.2	0.99	1.1	0.16	24	8	0.7	223
NWA 8046	0.32	7.8	700	4.6	20	210	140	240	1.7	0.7	0.75	0.6	0.08	10	2	0.2	152
NWA 8055	0.42	15.7	910	6.4	16	70	200	1130	1.8	0.9	0.91	1.0	0.15	4	<3	0.2	234
NWA 8127	0.11	29.2	3680	18.2	79	75	<80	70	4.7	2.6	0.21	2.2	0.32	<9	<4	0.6	72

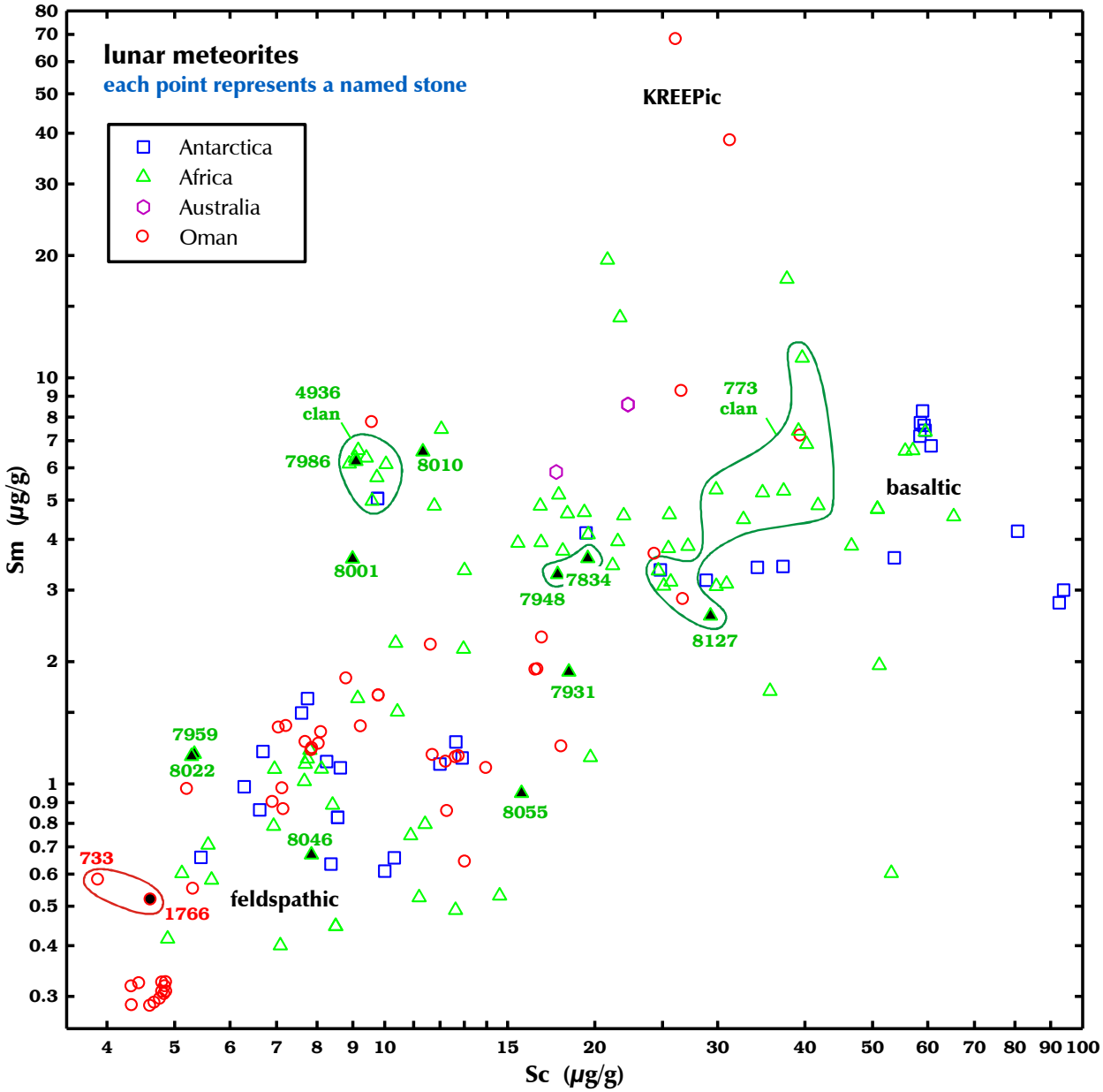

Figure 2. Each point represents a lunar meteorite stone (mass-weighted mean of all subsamples). New stones discussed in the text have filled symbols.