

**Table 4: Natural Thermoluminescence (NTL) Data for Antarctic Meteorites**

**Paul Benoit and Derek Sears**  
Cosmochemistry Group, Dept. Chemistry and Biochemistry  
University of Arkansas, Fayetteville, AR 72701 USA

The measurement and data reduction methods were described by Hasan et al. (1987, Proc. 17th LPSC E703-E709); 1989, LPSC XX, 383-384). For meteorites whose TL lies between 5 and 100 krad the natural TL is related primarily to terrestrial history. Samples with NTL <5 krad have TL below that which can be reasonably ascribed to long terrestrial ages. Such meteorites have had their TL lowered by heating within the last million years or so by close solar passage, shock heating, or atmospheric entry, exacerbated in the case of certain mildly metamorphosed meteorites by anomalous fading. We suggest meteorites with NTL >100 krad are candidates for unusual orbital/thermal histories (Benoit and Sears, 1993, EPSL 120, 463-471).

Samples	Class	NTL		Samples	Class	NTL	
		[krad at	250 deg. C]			[krad at	250 deg. C]
GRO95517	EH3	8	+ - 2	GRO95539	L3	<	1
GRA95215	H4	48.5	+ - 0.4	GRO95502	L3	<	1
GRO95527	H4	0.4	+ - 0.1	GRO95504	L3	<	1
GRO95541	H4	1.4	+ - 0.1	GRO95512	L3	<	1
				GRO95546	L3.8	3.8	+ - 0.1
GRA95213	H5	27.2	+ - 0.1	GRO95515	L4	139.8	+ - 0.5
GRA95214	H5	83.5	+ - 0.1	GRA95200	L5	39.6	+ - 0.1
GRO95519	H5	3.4	+ - 0.1	GRO95529	L5	78.9	+ - 0.2
GRO95521	H5	47.6	+ - 0.8	GRO95530	L5	37.2	+ - 0.1
GRO95524	L5	0.1	+ - 0.1	GRO95540	L5	0.5	+ - 0.1
GRO95537	H5	3.9	+ - 0.1	GRO95500	L6	19.5	+ - 0.1
GRO95538	H5	73	+ - 3	GRO95501	L6	12.0	+ - 0.1
GRO95507	H6	32.6	+ - 0.3	GRO95514	L6	15.0	+ - 0.3
GRO95525	H6	95.2	+ - 0.2	GRO95523	L6	0.1	+ - 0.1
GRO95536	L3	132	+ - 6				

The quoted uncertainties are the standard deviations shown by replicate measurements on a single aliquot.

**Comments:** The following comments are based on natural TL data, TL sensitivity, the shape of the induced TL glow curve, classifications, and JSC and Arkansas group sample descriptions.

GRO95502, GRO95504, and GRO95512 were classified petrographically as type 3.5 (AMN 20:2). TL sensitivities of these meteorites are very low (~0.001 relative to Dhajala H3.8) compared to type 3.5 meteorites. These meteorites may be of type 3.0-3.1, or they might be highly shocked. Extensive shock features were not reported in the initial description.

GRO95536 is type 3.3.

GRO95546 is confirmed as type 3.8 (AMN 20:2).

1. Pairings (Confirmations of pairings)  
L3: GRO95502, GRO95504, GRO95512 and GRO95539. (AMN 20:2).
2. TL data do not confirm pairing suggested in the Newsletter:  
L3: GRO95536 with the GRO95502 group (AMN 20:2)
3. Pairings suggested by TL data:  
H4: GRO95541 with GRO95527.  
H5: GRO95537 with GRO95519.  
H5: GRO95538 possibly with GRO95214.  
H6: GRO95525 possibly with GRO95516 (AMN 20:2).

Benoit P.H. and Sears D. (1997e) Natural thermoluminescence (NTL) data for antarctic meteorites. *Antarctic Meteorite Newsletter* **20(1)**, 15. Johnson Space Center, Houston TX.