**PETROLOGIC CLASSIFICATIONS OF TYPE 3 ORDINARY CHONDRITES AND A CO CHONDRITE FROM THE SAHARA**. S.R. Moore, D.W.G. Sears, P.H. Benoit, and A. Kracher. Arkansas-Oklahoma Center for Space and Planetary Sciences. University of Arkansas, Fayetteville, AR 72701. srmoore@uark.edu

Type 3 ordinary chondrites are some of the least altered meteorites. They are a petrologic window to the early solar system and its formation. Metamorphic features present in these major classes of chondrites are the distinctive attributes that enable their division into petrologic types. These characteristics range from obvious metamorphic features to a partially equilibrated texture. The recognition of these features can be difficult to establish, especially in the least-metamorphosed chondrites (type <3.4). Induced thermoluminescence (TL) has proved to be successful in the identification of these metamorphic features. The purpose of this paper is to discuss the classifications of a group of unequilibrated chondrites from the Sahara.

Samples consisted of four ordinary type 3 chondrites and a CO chondrite. The samples were taken from cut slabs, crushed to a fine powder, and their induced TL measured by the techniques described in [1]using the Dhajala (H3.8) meteorite as a reference for TL sensitivity. The inferred classifications from the TL sensitivity are given in Table 1 along with the temperature of maximum light production (peak temperature, T) and the temperature range over which light is produced (peak width, W). One of the samples is of special interest due to its classification as a low type 3 chondrite inferred to be a type 3.0 [3]. For the CO chondrite TL sensitivity indicated a type 3.3, but the glow curve shape indicated a type 3.6, so a classification of 3.5 is proposed.

TL sensitivity can be reduced by shock processing and weathering. There is no petrographic evidence for extensive shock processing in these samples, but they are weathered. Previous work indicates that weathering can lower the apparent type by as much as 0.1 units in ordinary chondrites [1,4]. In future work we will acid – wash the samples to eliminate the weathering products and determine whether the low-type chondrite's sensitivity was drastically reduced by weathering.

**References:** [1] Sears *et al.* (1991) *Proc. Lunar Planet. Sci*. **21,** 493; Benoit *et al*., *MAPS*, in press . [2] Keck and Sears (1987) GCA **51,** 3013 ; Sears *et al.* (1991*) Proc. NIPR SYMP. Ant. Meteor*. **4**, 319. [3] Lauretta *et al*. (2002) this meeting [4] Benoit and Sears (1999*) JGR* **104,** 14, 159.

Table 1. Induced TL data for Saharan unequilbrated chondrites.

| Sample | TL Sensitivity (Dhajala = 1.0) | Petrologic type | Peak T (˚C) | Peak W (˚C) |
|---|---|---|---|---|
| **Ordinary chondrites** | | | | |
| NWA 493 | 0.6 ± 0.1 | ~3.7 | 208 ± 6 | 142 ± 3 |
| NWA 511 | 0.13 ± 0.02 | ~3.5 | 183 ± 10 | 150 ± 4 |
| NWA 487 | 0.015 ± 0.004 | ~3.2 | 174 ± 13 | 150 ± 15 |
| NWA 505 | 0.0034 ± 0.0008 | ~3.0 | 180 ± 8 | 180 ± 20 |
| **CO chondrite** | | | | |
| NWA 502 | 0.087 ± 0.007 | ~3.5 | 142 ± 3 | 84 ± 2 |

*Inferred from induced glow curve shape.