

THE RECENT METEORITE FALL IN LORTON, VIRGINIA, USA

C. M. Corrigan¹, L. C. Welzenbach¹, M. Fries², T. J. McCoy¹, and J. Fries³. ¹Dept. of Mineral Sciences, National Museum of Natural History, Smithsonian Institution, Washington DC, USA. ²NASA Jet Propulsion Laboratory, 4800 Oak Grove Dr., Pasadena, CA, 91109, ³U. S. Air Force Weather Agency, 1st Weather Group, Offutt AFB, Omaha, NE, 68113, USA. E-mail: *corrigan@si.edu*.

Introduction: On Monday, January 18, 2010, a large fireball was reported by viewers in the greater Washington, DC, USA, area. Viewers from as far away as West Virginia have described seeing a large, single fireball at 5:45 PM, near dusk that evening, with some reporting having heard a large detonation. One stone has been recovered to date, that having fallen through the roof/ceiling of the Williamsburg Square Family Practice in Lorton, VA. The doctors, who were in the office at the time the meteorite fell, found the meteorite embedded into the concrete floor (under the carpet). It had broken into three large pieces, along with a few smaller fragments upon impact with the floor. The doctors describe hearing a sound akin to bookshelves crashing to the ground as the meteorite fell through the ceiling. This meteorite fall, the first fall on record in the DC area (nearest being Richmond, VA, 1828; St. Mary's County, MD, 1919; and Sharps, VA, 1921, M. Grady, *Catalogue of Meteorites*), and who's fireball was seen by many people on their evening commute, garnered an enormous amount of public/media interest.

The meteorite: The meteorite in question was brought to the Smithsonian Institution on Wednesday, January 20, for identification/classification purposes. The meteorite is approximately 8 cm x 5 cm x 5 cm, and is roughly rectangular, with a dark, matte, fusion crust. The meteorite contains a few small clasts visible on the broken surfaces. The interior is, not surprisingly, exceptionally fresh, with no evidence of oxidation of the metal grains. The metal grains are very small and evenly distributed throughout the rock. A few small (2 mm) relict chondrules are visible with the naked eye. The total mass recovered is 329.7 grams.

Petrography and Mineral Chemistry: This new meteorite is an L6 chondrite. Olivine composition is Fa: 24.7 ± 0.3 (n=23). Pyroxene composition is Fs: 20.9 ± 0.3 , Wo 1.6 ± 0.2 (n=16). Feldspar composition is An: 10.3 ± 0.3 , Or 6.4 ± 2.8 (n=14). This meteorite shows irregular fractures, but no undulous extinction in the olivine grains, and is, therefore, shock stage S1. No shock veins are present. Chondrules are rare, but when present, show diffuse outlines and some degree of recrystallization, with many crystals exhibiting 120-degree triple junctions. Metal and sulfide occur mostly as separate, blocky, grains found throughout the meteorite.

Doppler Weather Radar: The Lorton fall appears in radar data collected by the KLWX radar at Dulles Int'l Airport, in four separate radar sweeps. [1,2] First appearance of falling debris occurs at 2246:26 UTC and 3357m above local ground level. Three additional radar returns occur between 2529m down to 466m above local ground level, with the last appearance seen at 2249:00 UTC. Radar return locations suggest that a strewn field, if it exists, would extend from the single stone's fall site towards a compass heading of $\sim 83^\circ$ for a distance of ~ 16 km, although much of this material may be small.

References: [1] Fries M. and Fries J. *MAPS*, In press. [2] Fries M. and Fries J. *LPSC* 40, #1179.