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Villa Natamoros, An L3.7 Chondrite from the Allende Strewn Field.

Roger H. Hewins,[1] P. M. Radomsky,[1] Lu Jie,[2] F. A. Hasan,[2] E. Jarosewich[3] and D. W. Sears.[2] [1]Geological Sciences, Rutgers U., New Brunswick, NJ 08903 USA. [2]Chemistry, U. of Arkansas, Fayetteville, AR 72701 USA. [3]Mineral Sciences, National Museum of Natural History, Washington, DC 20560 USA.

A group of meteorites collected in the Allende strewn field for Alan Langheinrich included an unequilibrated ordinary chondrite from Villa Natamoros, 26°45′N, 105°24′W. There are seven other ordinary chondrites from the Allende area: Valle de Allende (L4, C. F. Lewis, personal communication), "Allende II (L6) and III" (Sanchez-Rubio *et al.*, 1988), Abajo (H5) Salaices (H4), Torreon de Mata (L6) and Villa Coronado (H5). A minority of its chondrules contains brown glass, and some contain clouded relict olivine or forsteritic grains as well as normal ferroan olivine. The range of olivine compositions is Fo99-63. A minority of the chondrule olivine grains shows strong zoning in BSE, but this is relatively patchy rather than sharply concentric. Olivine grains can be classified as Ca-rich (0.2–0.6 wt.% CaO) or Ca-poor (0–0.1 wt.% CaO). The Ca-rich grains, which include the most magnesian olivine crystals, show marked depletion in Ca and enrichment in Fe towards the rims. The Ca-poor grains show minor Fe enrichment at rims or are homogeneous, and show little variation in Ca. These grains correspond to olivine types B and D of Miyamoto *et al.* (1986), which we interpret as partially and completely reequilibrated crystals. The question of whether the reequilibration is nebular or planetary is of major interest.

Thermoluminescence sensitivity data (Dhajala = 1) are given below:

Mass (mg)	TL sensitivity	Peak position (°C)	Peak width (°C)
150	0.35 ± 0.10	171 ± 18	177 ± 13
150	0.35 ± 0.14	178 ± 17	193 ± 12
20	0.63 ± 0.20	135 ± 15	159 ± 11

The small sample is atypical, possibly being dominated by a silica-bearing chondrule. The petrologic type is 3.7/3.8.

Chemical analysis yielded the following composition: SiO_2 39.30, TiO_2 0.15, Al_2O_3 2.37, Cr_2O_3 0.42, FeO 16.06, MnO 0.32, MgO 24.54, CaO 1.86, Na_2O 0.87, K_2O 0.10, P_2O_5 0.19, Fe 5.30, Ni 1.19, Co 0.06, FeS 5.81, H_2O + 0.67, H_2O − 0.24, C 0.21, Total 99.66. This is an L chondrite, with FeO a little higher than average because of weathering.

Reference: Miyamoto M. *et al.* (1986) *J. Geophys. Res.* **91,** 12804. Sanchez-Rubio G. *et al.* (1988) NIPR **13,** 15.