Bar size tendency of Barred Olivine chondrules

K. E. Cervantes-de la Cruz[1,2], A. Segura[2], F. Ortega-Gutiérrez[3] . [1]Facultad de Ciencias, Universidad Nacional Autónoma de México. E-mail: karina-cervantes@ciencias.unam.mx [2]Instituto de Ciencias Nucleares, Universidad Nacional Autónoma de México, [3]Instituto de Geología, Universidad Nacional Autónoma de México.

Introduction: Chondrules are the principal component of chondrites, they usually have spherical form with sizes up to a few millimeters. Chondrule textures suggest they were melted during their formation. We analyzed the bar size of barred olivine (BO) chondrules and possible energy implicated. We studied the Nuevo Mercurio chondrite fell on December 1978, classified as an ordinary chondrite H5 by Fredriksson et al. [1] with lower impact metamorphism S1.

Analytical procedures: We examined barred olivine textural type chondrules in two thin sections of Nuevo Mercurio chondrite in transmitted and reflected light [2]. The sizes of bars were measured using a calibrated reticle with a micrometer.

Results: BO represented the 30% of 166 chondrules from Nuevo Mercurio chondrite. The studied chondrules can be divided into four groups according to their morphology:

1.- The group of fine bars, parallel and well-defined rim. Chondrules presented from 4 to 24 bars with thicknesses of 2.5-60 micrometers.

2.- The group of radial bars, with or without rim. Chondrules presented from 4 to 24 bars with thicknesses of 2.5-450 micrometers.

3.- The group of few bars and thick ring. Presented 2 bars with thicknesses from 5-260 micrometers.

4.-The group of poor-defined bars.

For all groups, the statistical analysis showed that the mode value for the bar width is 20 micrometers.

References: [1] Fredriksson, K. et al. (1979). Meteoritics, 14,40. [2] Cervantes de la Cruz, K. (2009) Ph.D. Thesis. http://132.248.9.195/pd2001/295331/Index.html

Acknowledgements: This work was supported by PAPIIT Grant IA105515 and CONACyT Grant No. 43227