MINERALOGICAL CHARACTERISTICS OF SPECIMENS OF A PSEUDOMETEORITE “FALL” FROM NW IRAN.

H. Pourkhorsandi* and H. Mirnejad, Department of Geology, Faculty of Science, University of Tehran, Tehran 14155-64155, Iran (hkhorsandi@khayam.ut.ac.ir). *Current address: CEREGE, Aix-Marseille Université, CNRS, France.

Introduction: In the early hours of October 22, 2011, people of a small town in NW Iran, called Khameneh (38°11'47" N, 45°38'14" E) noticed sounds of some colliding objects to home roofs and yard floors. News of the incident propagated in the media and internet immediately and a number of hazelnut-sized specimens were reportedly collected by local people and authorities. During a trip to the area, three samples were collected and given by local people to the first author, weighing between 6 and 11 grams. These samples were scattered in an area of ~200 m in diameter that was very small compared with strewn fields of meteoritic falls [e.g. 1].

Macroscopic and Microscopic Studies: Preliminary investigations showed that the samples had densities of ~ 2.2 g/cm³. High porosity of the samples justifies the low density of samples. Fine grained, rounded and brownish minerals with low birefringence are the most dominant constitutes. For detailed mineralogical investigation of the specimens, SEM and mineral chemistry examinations were undertaken at Origins Laboratory, Chicago. Three primary solid phases were identified: larnite, hatrurite and brownmillerite. For investigation of any possible relationship between Khameneh specimens with artificial compounds formed in a Portland Cement Company at about 40 km NE of the town, a visit to the furnace of the company carried out and it was surprising to find out that furnace specimens were very similar in mineralogy and texture to those of “had fallen” at Khameneh. Furnace rocks, named as Portland Cement Clinkers, are small, dark grey nodular materials made by heating ground limestone and clay at a temperature of about 1400-1500°C [2]. Clinkers are mainly composed of alite (Ca₃SiO₅ = hatrurite), belite (Ca₂SiO₄ = larnite, bredigite), and brownmillerite (Ca₂(Al,Fe)₂O₅) [3]. Khameneh event is somehow very similar to an event that occurred on 21st June, 1994, in the city of Getafe (Spain) [4]. Based on physical characteristics of “fall” and collected fragments and mineral chemistry of specimens, we conclude that Khameneh specimens are indeed man-made objects (portland cement clinkers) and thus the event was not a meteorite fall-related phenomenon.

Acknowledgments: The authors would like to thank Dr. A. Pourmand (RSMAS) and Origins Laboratory research team for mineral chemistry analyses.