Abstract Submitted for the TSF11 Meeting of The American Physical Society

Lunar in situ resource utilization by activated thermites MKHI-TAR HOBOSYAN, KAREN MARTIROSYAN, University of Texas at Brownsville - NASA's anticipated returns to the Moon by 2020, subsequent establishment of lunar in situ resource utilization technologies are essential. The surface of Moon is covered with small eroded particles of regolith called lunar dust that adheres electro-statically to everything coming in contact with it, and is of much concern for future lunar base because of its continual mitigation. The next major concern is the protection of equipment and personnel in long term expeditions from harmful UV radiation, which can be made by constructing protective buildings. For construction of permanent structures it is highly desired to have regular shaped sintered regolith with utilization of local materials and with minimum energy consumption. In this study the concept of sintering of lunar regolith with activated thermite reactions is discussed. The thermodynamic calculations as well as the experimental procedure is provided to prove the effectiveness of activated thermites for regolith sintering using local lunar resources with a low (15 wt. %) concentration of aluminum or magnesium. The thermite method is much more energy efficient than the other sintering methods suggested in literature.

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Date submitted: 07 Sep 2011

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