

IAF MATERIALS AND STRUCTURES SYMPOSIUM (C2)
Interactive Presentations - IAF MATERIALS AND STRUCTURES SYMPOSIUM (IP)

Author: Prof.Dr. Yusuf Cengiz Toklu
Turkey, cengiztoklu@gmail.com

LUNAR REGOLITH, SIMULANTS, AND THEIR USE IN LUNAR CONSTRUCTIONS

Abstract

To the best of knowledge, the only available in-situ material on the Moon is the lunar soil, or regolith. Therefore, it is projected that the greatest utilisation of regolith is the key on the Moon territorial environment to diminish the cost as well as the workmanship of material transportation from Earth. The study begins with a comprehensive overview on lunar regoliths comprising not only their origins and properties of such materials but also with the associated insights regarding the need of obtaining their simulants on the Earth. The study is then addressing a list of lunar regolith simulants produced until very recently, including the one named TBG-01 produced in Türkiye, providing critical properties and comparisons. Lastly, the construction materials to be produced on Moon by means of utilising regoliths are discussed extensively. The study also comprises vital comparisons between the Moon and Mars to demonstrate the similarities in building outposts on these two space objects. The study provides an insight into the still unresolved question in the domain regarding designing cost-effective planetary habitats; topic which should be a focus of future investigations in the field.