



# Research Thrust-3: Additive Manufacturing for ISRU

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Sub-Project 1: Engineering characteristics of lunar regolith-based building block using AM

# Statement of R&D Problem

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- Since the 1980s, the NASA has been investigating to establish permanent bases (or lunar surface habitation systems) on the Moon, and research on development of ISRU technologies on the Moon also serves as a proving ground for their applications on Mars. However, the establishment of lunar habitat will need the basic infrastructure to shelter people from the harsh environment in the Moon, and one viable option to build the lunar habitat is to utilize the in-situ lunar regolith as construction materials, which is the most abundant material available in the Moon surface and can provide significant economic saving for habitat building.

# Statement of R&D Problem

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- The thickness of the regolith in the mare area is about 5 meters in average, and it can reach more than 10 meters in the highlands. Recent advancements in 3D printing technology provide a viable and efficient tool for utilizing the lunar regolith for building habitats on the Moon with reduced logistics from the earth. There have been some studies on types of additive manufacturing processes for building the lunar habitat. However, there is still limited knowledge available on the fundamental understanding of interactions among engineering characteristics of building block, the additive manufacturing process, and properties of raw materials.