

Inflatable Structure for Space

An inflatable structure will be needed due to Mars's Low atmospheric pressure which will cause an immediate threat to human health. Therefore to regulate a pressurised environment, a proposal of habitation capsule which contains an inflatable structure will maneuver through the constructed rhizomatic path and settle in an optimized spot. The advantages of going underground provide more secure environment from various radiation and micrometeoroids which allow inflatable layer to be less complicated and less mass to be transported. The inflatable layer can be achieved by materials such as neoprene, vectran, kevlar or Ultra-high-molecular-weight polyethylene by Dutch chemical company DSM (<https://www.dsm.com>). The range of these proposed materials can also be reproduce on Mars through ISRU by silicon which is proven to be abundance on Mars. The inflatable architecture system will be design based on ESA's current development such as Lunar habitation with Foster and Partners(<https://www.fosterandpartners.com/projects/lunar-habitation>) and Moon Village by SOM(<https://www.som.com/news>).

Space Architecture References

-SOM Moon Village

<https://www.youtube.com/watch?v=09jiCgJHVuU>

Material References

-Ultra-High-molecular-weight

<https://www.facebook.com/dyneema/>

<https://www.dsm.com>

-Vectran and Kelvar

<https://www.graphicnews.com/en/pages/30235/SPACE-Inflatable-habitat-for-ISS>

<https://www.youtube.com/watch?v=HUK1P7E3ytA>

-Neoprene and Kelvar-49

Referring to Colorado State University

<https://sci.esa.int/documents/33321/35974/1567256201706-130700-Sadeh.pdf>