

Lunar Light House

The Lunar Light House project is driven by the need to develop a novel system of protection against the cosmic radiation for the 'surface' Lunar base, which would allow for more freedom in shaping the base structure and also potentially allow for introducing natural sun light to the structure.

The base is located on the rim of Shackleton Crater, on the lunar south pole, in the 'peak of eternal light', with a sun light present for almost 90% of the time.

The base consist of two structure systems. To ensure life support system for humans the tight structure is needed. The project proposes bringing inflatable components from Earth which would create a habitat. The other structure, the main focus of the project, works as a shell for the pressurised modules. It's primarily purpose is to ensure passive radiation shielding. For that there is an In-Situ grown nano-cellulose used. Together with the lunar regolith, nano-cellulose membranes would create a composite system, based on the soil reinforcement principles.

Thanks to the use of nano-cellulose its possible to build a tall structure build on a Moon, which would overcome the obstacles given by the dust, floating above the surface raised by the vehicles' engines and mechanical works. Additionally, with a site in the peak of eternal light, due to the nano-cellulose membrane placed all along the structure, the sun light gradually passes inside, having its climax on the top of the structure. Translucent nano-cellulose not only transmits light to the base but also lights up itself, making the top of the base clearly visible from the outside. During the external activities the base becomes for the astronauts what a Light House was for sailors.