

SYMPOSIUM ON VISIONS AND STRATEGIES FOR THE FAR FUTURE (D4)
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DIFFERENT PROSPECTS FOR SPACE COLONIZATION EFFORTS FOR THE FUTURE OF
HUMANITY: POSSIBILITIES AND CHALLENGES

Abstract

Human settlements in space have been a hotly debated topic for quite a while now. The prospects offered by the possibility of living on another planet or the moon are tremendous and surreal. The designs for space settlements have already been drawn up by the scientific community. While this paper does not discuss those designs and their flaws, it does however, notice a similarity in many of those proposed designs. The most common component of the design is the presence of a dome shaped object constructed on the surface of the planet/ heavenly body, inside which either the humans or the supplies and equipment are harbored. This dome shaped structure is however, prone to constant damage by meteorites and other particles that constantly strike its surface. A collision with a large enough particle may cause part of this structure to shatter or crack leading to the infamous expulsion of the air inside into the outside emptiness of space. This paper sheds light on this issue and provides solutions for the problem in the form of self healing, smart materials which can be used to construct the dome shaped structure and lead to the safeguarding of the contents inside the dome and the entire mission itself. The use of these materials would lead to a robust design which would greatly reduce mission costs in the long run. Moreover, research in this field may lead to possible spin off technologies for use in the aerospace and/ or other sectors back here on the Earth.