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MYCELIUM COMPOSITES: THE 'PRIMA MATERIA' FOR DESIGN IN AEROSPACE AND OUTER
SPACE

Abstract

This paper explores the design and applications of mycelium composite materials in aerospace design and within the construction of a Martian base. Mycelium – the vegetative, structural part of mushrooms and fungi, have the ability to grow in extreme conditions, without light, water or petrochemicals. Mycelium has been found growing in extreme environments such as: Antarctica, Chernobyl, and outer space. Due to the tenacious ability of mycelium to produce in the most extreme conditions positions mycelium composite material as a good match for designing in outer space. Composite materials made from mycelium growth within a substrate provide a petroleum free, sustainable building medium. Lightweight, easily regenerated, and inert, mycelium composite materials provide a functional, self-sustaining option for several applications in aerospace design. These applications include but are not limited to: insulation, acoustical dampening, interior design, and as a structural building material with the use of reinforcements. The properties of the composite matrix can be tailored according to need; known composites include properties ranging from soft and leather-like, stiff and unyielding, and elastic and smooth.