

# Material function of mycelium-based bio-composite

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## Abstract

The aim of this study is to develop new and large area mycelium-based biopolymers with good mechanical properties. Mycelium based polymer has received much attention recently due to its strong advantages such as wide availability low cost, and total composability without any toxicity. The present work aims to combine cultivation of new mycelial fiber from fungi over bioplastics obtained from agriculture waste. The field of bio-based polymers is a dynamic, versatile field in which the developments of natural polymers from different natural sources like agriculture, vegetable waste are becoming more and more important. The most abundant component in these wastes is cellulose which is dissolved easily in trifluoroacetic acid, an organic acid. Fungi use the cellulose and other polysaccharides as a source of carbon, and as such these fungi secrete different types of enzymes like cellulases, peroxidases, lignocellulase which involves in the degradation plant-based carbon sources. In the present work, cellulose was dissolved in trifluoroacetic to make transparent bioplastics. These cellulose films were further used for the growth of mycelium fiber. Two different types of fungal mushroom variety were selected, namely *Pleurotus Ostreatus* and *Ganoderma lucidum*. Both of these are edible mushrooms. They can grow long mycelium thread like fibers over the cellulose bioplastics as they consume it under optimum temperature and humidity conditions.

## Biography

Extensive knowledge across a variety of disciplines Nanobiotechnology, Biotechnology and Microbiology. Excellent coaching and mentoring skills. Ph.D. in Bionanotechnology with a strong background in bio based composites biomaterials. biosensors, nanostructure & nano drug delivery. Wide area of expertise in microfluidic devices, microbe's on a chip. I have experience in self-growing materials and characterization, mechanical properties, thermoplastic properties, conductivity and chemical

properties, etc. One of the projects how to utilize the waste for a useful purpose. I used the mycelium, the main body of fungi. The said material has many application in medicine as dressing materials, packaging, etc. Previously, I also worked on genetic transformation, tissue culture, DNA extraction, and Microbial study. I am a passionate scholar and an enthusiastic learner of experimental science. Strengths include multi-cultural teamwork, highly productivity and self-motivated.