

“Bio-Welding” of Mycelium-based Materials

Shaina SAPORTA*, Matthew Clark^a

* PE. Associate, Arup
77 Water St, New York, NY 10005
shaina.saporta@arup.com

^a Arup, New York

Abstract

This paper will discuss a recent installation advancing the use of mycelium-based materials. This work builds on previous work done as part of the mycelium-based Hy-Fi installation in 2014, to establish baseline design criteria and understanding of the structural behavior of mycelium-based materials [1]. For a recent installation in Paris, France with architect The Living, the material was taken a step further utilizing the concept of “bio-welding”, allowing in situ growth of the material to bond individual units.

One of the current constraints on bio-based materials is the use of forms to grow a single unit – either smaller forms are used to create individual units which are then stacked as in masonry, but connection becomes a challenge, or a single large form is used, with growth and transport of the final units restricted. The use of bio-welding allows for growth using standard units, for ease of transport and growth, which are then poured into a final form in situ.

This work will describe the advantages of bio-welding and when it may be preferred over currently used methods in mycelium-materials. The methodology used in design and the results of prototyping and testing of the bio-welded material will also be discussed.



Figure 1 – Installation in Paris, France (photo: The Living)

References

- [1] S. Saporta, F. Yang and M. Clark, “Design and Delivery of Structural Material Innovations” in *Proceedings of the ASCE Structures Congress*, 2015.