

HIGHLY PRINTABLE HYDROGEL FOR BIOPRINTING

Technology Overview

Current hydrogel materials are lacking in terms of suitable printability and insufficient mechanical stability after printing. This novel hydrogel has two distinct features which are high printability and high mechanical strength. By using the new hydrogel as bio-ink in this invention, complex biological structure for biomedical applications can be designed and printed. Moreover, after cross-linked, this novel hydrogel has sufficient mechanical strength to be handled and can be placed in bioreactor for further tissue maturation *in vitro* before implantation.

Potential Applications

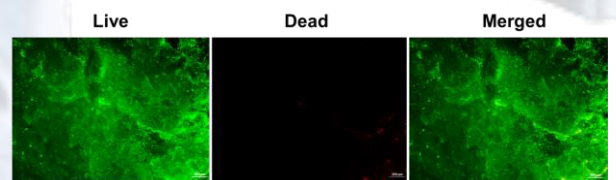
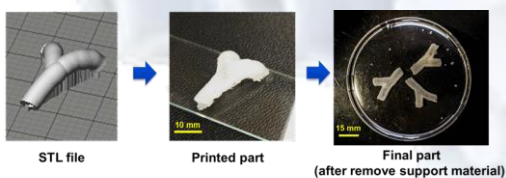
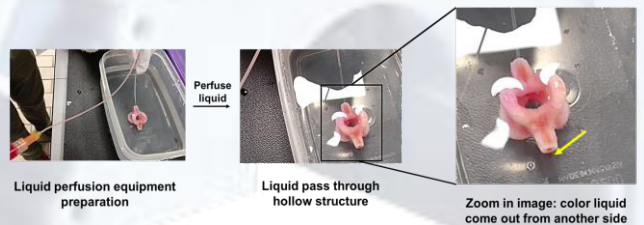
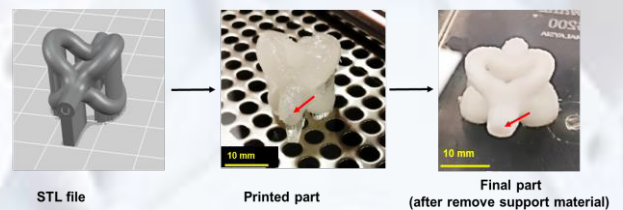
This high performance hydrogel composite is suitable for complex 3D bioprinting. The 3D bioprinted part is very useful for tissue engineering and related biomedical applications such as toxicity testing and drug delivery. Lastly, the high performance hydrogel will allow us the print or guide the blood vessels network structure which will be possible alternative solution for vascularization issue.

Customer Benefits

- Easy to synthesize and modify, most of equipment can be found in normal chemical lab & plant
- Easily scalable
- Highly biocompatible (both reactants are FDA approved)
- Versatile, can be used with most of extrusion based bioprinter
- Highly printable and easy for optimization
- Able to stay for 2-4 weeks allow many *in vitro* experiment to be done

Features & Specifications

This invention has various features which are high performance in printability for complex structure, high mechanical strength for *in vitro* and tissue model applications and easy to clean only by changing temperature (before crosslinking). Moreover, the product can be easily scale up for large volume production. Since reaction schemes are provided, scale up is not a problem.



If you are interested in this technology, please contact the BD Manager: edmund.lim@ntu.edu.sg