Title; Biofabrication: Challenging on 3D fabrication with biological living materials.

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Tissue engineering has been developed in order to provide useful biological tissues for medical therapies or biomedical researches. Biological tissues are composed of multi-scaled components from living cells and proteins, to small tissues such as capillary vessels, to larger tissues and finally organs. It is one of the biggest issues to construct such complicated 3D biological structures by engineering approach. The research field, which is focusing specially on pursuing the effective technologies to produce such complicated tissues, has emerged. It is called "Biofabrication". In Biofabrication, many processes are required, where many inexperienced technologies, tools and manufacturing machines are needed, respectively. Application of micro-manufacturing and MEMS technologies are indeed promising, however, cells are living and fragile and wet materials. In addition, all of the biological materials must be treated and maintained all through biocompatible processes under the biocompatible environment.

In this presentation, the developments of biofabrication will be introduced, and the fusion of bio- and micro-fabrication will be discussed.