The Development of an Optically Controlled Skeletal Muscle Biological Actuator Using Stereolithography

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Location: 1000 MNTL at Illinois (KL 361 at UC Merced)

Abstract:

We have used a 3D printing technology (stereolithography, or SLA) to create a hydrogel structure capable of actuation when combined with skeletal muscle cells and fibrous ECM proteins. The energy of polymerization from the SLA can be altered to achieve structures with different stiffness values and hence different bending and actuation. The 'bio-bot' biological actuator is capable of achieving net motion through asymmetry and can also be controlled using optogenetic-based methods.