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Fabrication of Smart Devices using 4D Printing Technology

4D printing is one of the latest manufacturing technology that combines additive manufacturing with smart materials to create innovative products and devices. While 3D printing technology is capable of creating complex geometries, it is mostly limited with the material choices. Recent advancement in 3D printing have shown that composite structures with new functionality can be created. Smart materials are emerging class of materials that possess great properties to mend them self with change in environment on-demand and over time. These materials can be used to fabricate biomedical devices, robotic devices and other smart products. However, some of these applications of smart materials are limited by the current manufacturing approaches which limit devices to simple geometries. Integrating 3D printing process along with smart materials could help realize the promised potential of both these advanced technologies. This research involves studies on an additive manufacturing based 4D printing process with an aim to fabricate highly customized smart devices.