

3D PRINTING OF MULTI-FUNCTIONAL STRUCTURES

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3D printing has generally been relegated to fabricating conceptual models and prototypes; however, increasingly, research is now focusing on fabricating functional end-use products. As patents for 3D printing expire, new low-cost desktop systems are being adopted more widely and this trend is leading to products being fabricated locally. However, currently the technology is limited in the number of materials used in fabrication and consequently is confined to fabricating simple static structures. For additively manufactured products to be economically meaningful, additional functionalities are required to be incorporated in terms of electronic, electromechanical, electromagnetic, thermodynamic, chemical and optical content. By interrupting the 3D printing and employing complementary manufacturing processes, additional functional content can be included in mass-customized structures. This presentation will review work in multi-process 3D printing for creating structures with consumer-specific wearable electronics, electromechanical actuation, electromagnetics, propulsion and embedded sensors in soft tooling and even in metal and ceramic structures.

