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Additive Manufacturing of Continuous Wire Polymer Composites

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Abstract

There has been a growing trend towards producing functional components using additive manufacturing (AM). A Continuous Wire Polymer Composite (CWPC) manufacturing method using an open-source desktop 3D printer is presented. The incorporation of continuous wires within AM structures results in a composite structure. The reinforcement of AM components with continuous wires results in improved mechanical properties and wire reinforcement can be oriented in critical locations of AM components. The CWPC manufacturing method will allow for fabrication of thermal and mechanical sensors for temperature and strain, 3D printed heating elements and for high strength components.

Keywords: additive manufacturing, polymer composites, 3D printing, fused filament fabrication,

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