LIQUID METAL ELASTOMER COMPOSITES FOR MATERIAL EXTRUSION ADDITIVE MANUFACTURING

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Abstract

Liquid metal (LM) elastomer composites have shown enormous potential for wearable electronic systems because of their high thermal and electrical conductivities and compliant mechanical response. Additive manufacturing of these materials has recently attracted attention in order to provide rapid prototyping of soft electronic structures. Here we show 3D printing of liquid metal composites with programmable LM microstructures. The structure and mechanical behavior of the composites is investigated to determine how the material properties change during the additive manufacturing process. We show that the print parameters have a strong influence on the size and shape of the liquid metal inclusions. The printed materials exhibit a soft mechanical response, and high thermal conductivity that is useful for wearable electronics applications.