Abstract Submitted
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Reversible Shape Memory[1] JING ZHOU, QIAOXI LI, SARA TURNER, SARAH BROSNAN, CARY TIPPETS, University of North Carolina at Chapel Hill, JAN-MICHAEL CARRILLO, University of Connecticut, DMYTRO NYKYPNACHUK, OLEG GANG, Brookhaven National Laboratory, ANDREY DOBRYNIN, University of Connecticut, RENE LOPEZ, VALERIE ASHBY, SERGEI SHEIKO, University of North Carolina at Chapel Hill — Reversible shape memory has been achieved on various shapes, e.g. hairpin, origami, coil, robotic gripper and flow rate control device, allowing for multiple switching between encoded shapes without applying any external force. Also, the reversible photonic structure molded in dielectric elastomers has been designed. Maximum reversibility can be achieved by tuning the crosslinking density and the degree of crystallinity of semi-crystalline elastomers. Different crystallization protocols including isothermal and cooling crystallization have been applied to develop a universal picture integrating different shape memory (SM) behaviors: conventional one-way SM, two-way reversible SM, and one-way reversible SM.

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