

## Liquid Crystal Elastomers as Light-Driven Star-Shaped Microgripper

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**Abstract :** Scientists are very keen on biomimetic research that mimics biological species to micro-robotic devices with the novel functionalities and accessibility. The source of inspiration is the complexity, sophistication, and intelligence of the biological systems. In this work, we design a light-driven star-shaped microgripper, an autonomous soft device which can change the shape under the external stimulus such as light. The design is based on light-responsive Liquid Crystal Elastomers which fabricated onto the polymer coated aligned substrate. The change in shape, controlled by the anisotropy and the molecular orientation of the Liquid Crystal Elastomer, based on the external stimulus. This artificial star-shaped microgripper is capable of autonomous closure and capable to grab the objects in response to an external stimulus. This external stimulus-responsive materials design, based on soft active smart materials, provides a new approach to autonomous, self-regulating optical systems.

**Keywords :** liquid crystal elastomers, microgripper, smart materials, robotics

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