

Electrically active gecko-effect soft gripper under a low voltage via mimicking gecko's adhesive structures and toe muscles

Hongmiao Tian,[‡] Haoran Liu,[‡] Jinyou Shao,^{*} Shuai Li, Xiangming Li and Xiaoming Chen

Micro- and Nano-technology Research Center, State Key Laboratory for Manufacturing Systems
Engineering, Xi'an Jiaotong University, 28 Xianning Road, Xi'an, 710049, P. R. China.

* Corresponding author

E-mail: jyshao@xjtu.edu.cn (Jinyou Shao)

Figures:

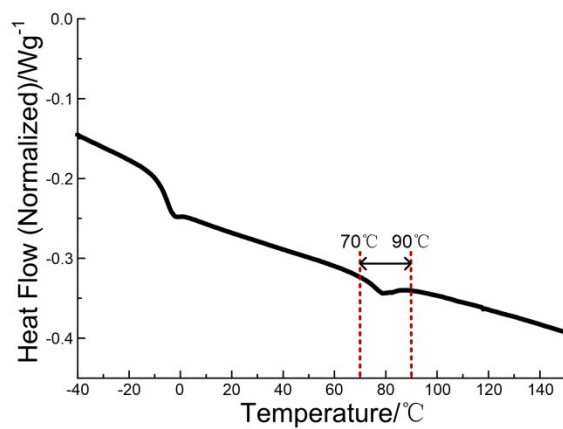


Figure S1. Differential scanning calorimetry (DSC) curve of LCE film.

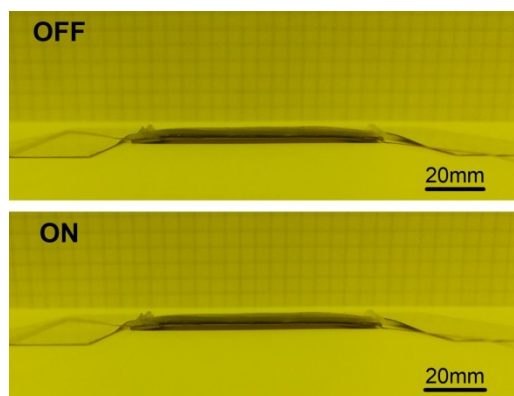


Figure S2. Deformation of adhesive structure without LCE film under voltage off and voltage on.

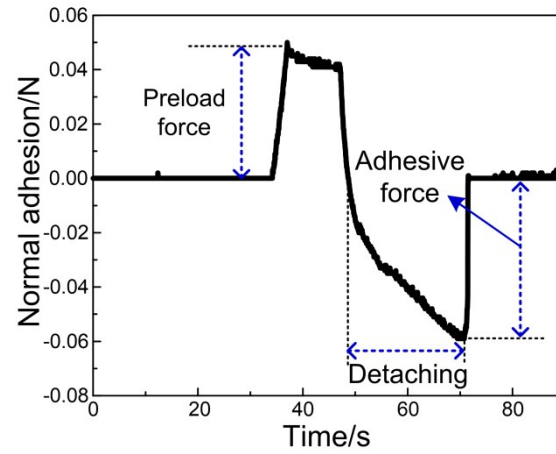


Figure S3. Tested adhesive force as a function of time.

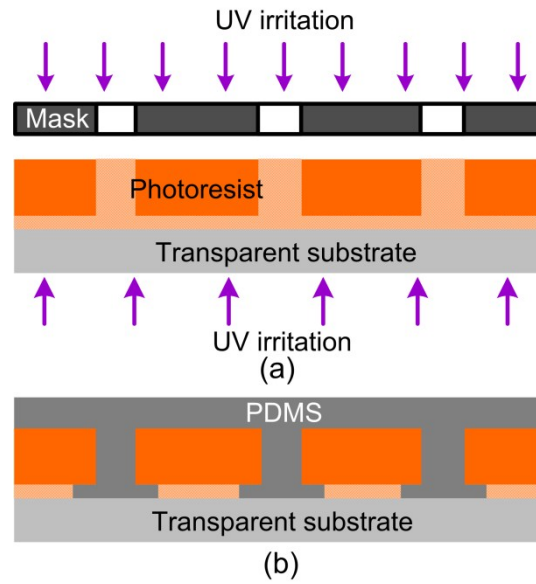


Figure S4. Basic fabrication procedure for mushroom-shaped structures

Videos:

1. Supplementary 1 Video

Supplementary 1 demonstrates the separation process of the glass ball from the adhesive film activated by a voltage of 6 V, in which the glass ball is considered as a typical non-flat surface.

2. Supplementary 2 Video

Supplementary 2 demonstrates the separation process of the glass plate from the adhesive film activated by a voltage of 6 V, in which the glass plate is considered as a typical flat surface.

3. Supplementary 3 Video

Supplementary 3 demonstrates the dynamic process of gripping, transferring and releasing a glass ball with 3.6 g in weight and 14 mm in diameter

4. Supplementary 4 Video

Supplementary 4 demonstrates the dynamic process of gripping, transferring and releasing a sample bottle with 66 mm in length and 10.5 g in weight.

5. Supplementary 5 Video

Supplementary 5 demonstrates the dynamic process of gripping, transferring and releasing a steel weight with 15 mm in diameter and 20 g in weight.