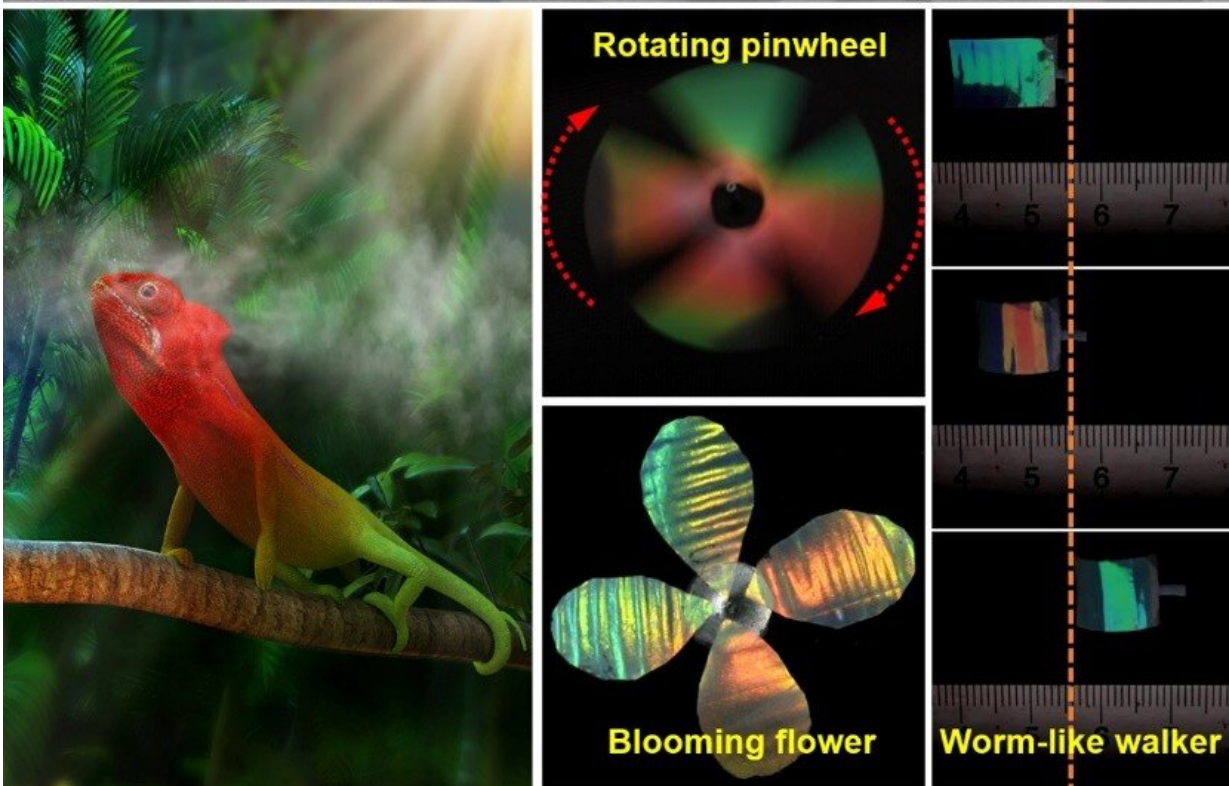
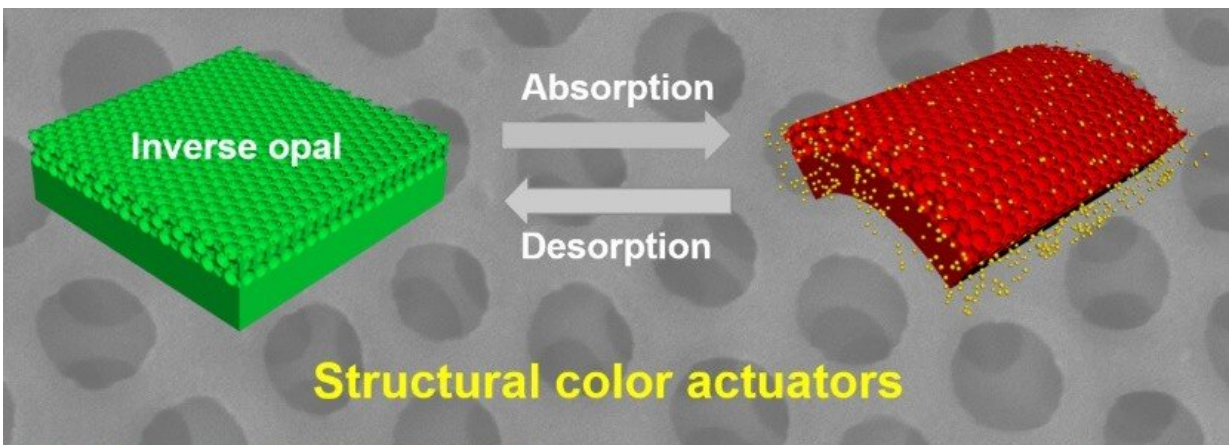


Chameleon-inspired structural color soft robot can interact with environment

July 31 2019



Chameleon-inspired structural-color soft actuators interact with the environment.
Credit: Dr. Du Xuemin

A novel structural color soft robot with both color-changing and locomotion capabilities has been developed by a research team led by Dr. Du Xuemin from the Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences.

Inspired by the color-changing capability of the [chameleon](#), which can actively tune a lattice of light-reflecting nanocrystals in its top layer of skin cells—the iridophores—in order to adapt to the changing environment, the structural color [soft robot](#) is able to sense the changing environment, thus exhibiting vivid color alterations and programmable locomotion. This capability will pave the way for advances in robot-environment interaction, such as sensing, response and communication.

Thanks to its periodic structure and asymmetric friction design, which ensure fast color alteration and programmable shape transformation (in less than 1s), the worm-like structural [robot](#) can move forward straight and rhythmically, exhibiting dynamic color change when the environment changes.

These extraordinary properties were used to develop a rotating pinwheel and a closing/blooming flower featuring brilliant color changes. These smart actuations could have important implications in sensing, communication and disguise for soft robotics.

The research findings were published in the latest issue of *Matter*, in a paper entitled "Chameleon-inspired [structural color](#) actuators."

More information: Chameleon-inspired structural color actuators, *Matter*, [DOI: 10.1016/j.matt.2019.05.012](https://doi.org/10.1016/j.matt.2019.05.012)

Provided by Chinese Academy of Sciences

Citation: Chameleon-inspired structural color soft robot can interact with environment (2019, July 31) retrieved 9 April 2024 from <https://techxplore.com/news/2019-07-chameleon-inspired-soft-robot-interact-environment.html>

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