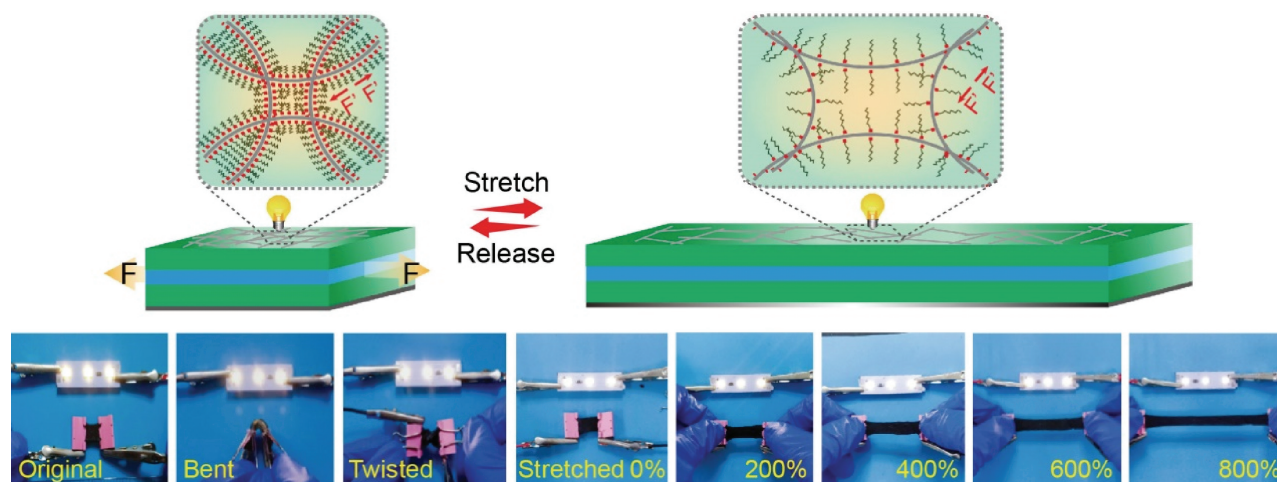


## Stretchable and self-healing supercapacitors integrated by metal-thiolate coordination

With the support by the National Natural Science Foundation of China, the research team led by Prof. Cong HuaiPing (从怀萍) at Hefei University of Technology, in collaboration with the research group led by Prof. Yu ShuHong from the University of Science and Technology of China, reported the construction of a highly stretchable and multi-responsive real-time omni-healable supercapacitor, which was published in *Advanced Materials* (2019, 31: 1900573).

With the popularization of wearable and portable electronics, stretchable supercapacitors are highly demanded in the use as power sources. Due to the lack of efficient structural design and integrated device configuration, the current stretchable supercapacitors showed unsatisfactory capacitive performance and limited stretchability. On top of that, these devices are far from smart because there is great difficulty in simultaneously integrating stretchable and smart elements into one device while not sacrificing their capacitor performance. Furthermore, no work has involved the real-time self-healing supercapacitor.

To solve these problems, utilizing the intrinsically stretchable and healable hydrogels as the electrodes (their previous finding published in *Chem*, 2017), they constructed a highly stretchable and real-time omni-healable supercapacitor with an integrated all-in-one device configuration with the assistance of dynamic metal-thiolate coordination chemistry. The assembled supercapacitor device delivers a large areal capacitance of  $885 \text{ mF/cm}^2$ , superhigh stretching strain of 800%, rapid optical self-healing capability, and unique real-time electrical self-healability during the charge-discharge process. These prominent performances grant these supercapacitors highly promising as the stretchable and self-healing energy-storage devices. These findings are expected to promote the future development of flexible and wearable electronics.



**Figure** Schematic illustration and optical images of the stretchable and self-healing supercapacitor.