

Highly Foldable Wearable Textile Li-ion Battery Rechargeable by Solar Power.

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Wearable electronics represent a tremendous paradigm shift in consumer electronics since they eliminate the necessity for separate carriage of devices. Especially, integration of flexible electronic devices with clothes, glasses, wrist watches, and even skin will bring new opportunities beyond what can be imagined by current inflexible counterparts. Although considerable progresses have been made for wearable electronics, lithium-ion batteries, the power sources of the devices, do not keep pace with such progresses because of tenuous mechanical stabilities, causing them to remain as the limiting elements in the entire wearable technology. Herein, we revisit the key components of the Li-ion battery and replace them with the unconventional materials that support robust mechanical endurance of the battery. The Final full-cells in the forms of clothes and watchstraps exhibited good electrochemical performance even under severe folding-unfolding motions simulating actual wearing conditions. Furthermore, the wearable textile battery was integrated with lightweight and flexible solar cells on the battery pouch to enable convenient solar-charging capabilities.