

Transparent and stretchable supercapacitor: kirigami and nanonetwork based approach

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In daily life, demands for stretchable electronics in application of electronic skins and wearable displays require transparency and stretchability in energy storage devices. Among various energy storage devices, supercapacitors have been receiving increasing attention in recent years owing to their high power density, fast charge/discharge rate, and long cycle-life. In addition, they are expected to be thin, transparent and stretchable for the application of wearable devices. To date, many researches have been focused on flexible supercapacitors. For example, supercapacitors using MnO₂/Au nano-network electrodes, which consist of one-body single-layer network structure, have been reported achieve flexibility of these devices. However, supercapacitors with transparency and stretchability are highly desirable for the applications of wearable devices. Here, we report transparent and stretchable supercapacitor with the combined concept of kirigami and metalized nanowire nano-network structures.