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# Stretchable Fiber-Shaped Asymmetric Supercapacitors with Ultrahigh Energy Density

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## Abstract

Fiber-shaped asymmetric supercapacitors (FASCs) have attracted considerable attention due to their potential application in portable and wearable electronics. Although high stretchability have been achieved in fiber-shaped supercapacitors, low energy density severely restricts their practical applications. This study develops a simple and cost-effective method to synthesize highly capacitive hierarchically-structured  $\text{MnO}_2$ @PEDOT:PSS@oxidized carbon nanotube

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