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All-solid-state flexible self-charging power cell basing on piezo-electrolyte for harvesting/storing body-motion energy and powering wearable electronics

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Abstract

A new all-solid-state self-charging power cell (SCPC) has been fabricated using mesoporous PVDF-LiPF₆ film as piezo-electrolyte. The solid piezo-electrolyte can act as both the electrolyte and piezo-separator, which is prepared through immobilizing the liquid electrolyte in mesoporous PVDF film. The all-solid-state flexible SCPC can be efficiently charged up by mechanical deformation, and thus can directly harvest/store the body-motion energy. The SCPC sealed in stainless-steel cell can be charged by compressive deformation (30 N, 1 Hz) and the storage capacity is 0.118 μ A h within 240 s, which is about 5 times larger than that of the traditional non-integrated system. The SCPC sealed in flexible shell can

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