High-Performance, Flexible, and Transparent Supercapacitor Based on Co(OH)2 Nanosheets/Ag Nanowires Hybrid Network

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Abstract

A future trend in wearable electronics will be the shift toward optically transparent devices. High-performance flexible transparent electrodes are the prerequisite of building flexible transparent supercapacitors (FTSCs), as it requires active materials to be sufficiently transparent without compromising energy storage. In this work, we manipulate the morphology of the active materials and the junctions on the current collector to achieve optimum electronic/ionic transport kinetics. Two-dimensional Co(OH)2 nanosheets with single or two layers were vertically aligned onto a modified Ag nanowires (AgNWs) network using an electrochemical deposition−UV irradiation approach. The metallic AgNWs network endows high transparency while minimizing the contact resistance with the pseudocapacitive Co(OH)2 nanosheets. The Co(OH)2 nanosheets self-assembled into a three-dimensional array, which is beneficial for the fast ion movements. Collectively, these findings provide feasible solutions of transition hydroxides as high-performance electrode materials in FTSCs.

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| Figure 1 Schematic of the Fabrication Procedure for the FTSCs. |

References

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