High Performance Symmetric Supercapacitor Based on Sunflower Marrow Carbon Electrode Material

KanjunSun^{1,2,*}, Qian Yang², YanpingZheng¹, GuohuZhao¹, YanrongZhu¹, XiaopingZheng¹, GuofuMa^{2,*}

¹ College of Chemistry and Environmental Science, Lanzhou City University, Lanzhou 730070, China.

² Key Laboratory of Eco-Environment-Related Polymer Materials of Ministry of Education, Key Laboratory of Polymer Materials of Gansu Province, College of Chemistry and Chemical Engineering, Northwest Normal University, Lanzhou 730070, China.

*E-mail: sunkj@lzc.cn.edu.cn, magf@nwnu.edu.cn

Qian Yang and Kanjun Sun contributed equally to this work.

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In this study, sunflower marrow is used as raw material to prepare porous carbon via a simple carbonization method activated by ZnCl₂ and FeCl₃ mixture. The as-prepared porous sunflower marrow carbons (PSMCs) show large number of mesoporous and masoporous, maximum specific surface area of 1628.5 m² g⁻¹ and large pore volume of 2.34 cm³ g⁻¹. As an electrode material for supercapacitor, the PSMCs possess high specific capacitance of 252.5 F g⁻¹ at 0.5 A g⁻¹. A symmetric supercapacitor used PSMCs as electrodes exhibits energies density of 12.4 Wh kg⁻¹ at a power density of 817 W kg⁻¹ operated in the voltage range of 0-2.0 V in 0.5 mol L⁻¹ Na₂SO₄ aqueous electrolyte. Also, the carbon material shows excellent cycleability retains about 97% initial capacitance after 5000 cycles.

Keywords: Sunflower marrow, Porous carbon, Supercapacitors

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