

研究论文

高压静电纺丝法制备P(VDF-HFP)聚合物电解质

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摘要 以高压静电纺丝法制备了具有微孔结构的偏氟乙烯-六氟丙烯共聚物[P(VDF-HFP)]无纺布膜, 吸附离子液体3-乙基-1-甲基咪唑鎓四氟硼酸盐(EMIBF₄)后成为凝胶聚合物电解质, 其室温离子电导率达到8.43 mS·cm⁻¹, 初始热失重温度超过300 ℃. 以其为聚合物电解质的活性碳电极双电层电容器具有较好的电化学性能, 1.0 mA·cm⁻²恒流充放电500次循环后仍保持 90.67 F·g⁻¹的比容量, 容量保持率为96.86%.

关键词 [离子液体](#) [静电纺丝](#) [聚合物电解质](#) [双电层电容器](#) [离子电导率](#)

分类号

P(VDF-HFP)-Based Polymer Electrolytes Prepared by High-Voltage Electrospinning Technology

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Abstract Non-woven membranes based on poly(vinylidene fluoride-co-hexafluoropropylene) [P(VDF-HFP)] copolymer which contain microporous structure have been prepared by electrospinning method. The resulting polymer-ionic liquid electrolytes P(VDF-HFP)/EMIBF₄ possess an ionic conductivity of 8.43 mS·cm⁻¹ at room temperature and high temperature for initial weight losing over 300 ℃. The electric double-layer capacitors, applying the polymer-ionic liquid electrolytes as separator, were fabricated and tested. It exhibits excellent electrochemical properties, such as maintaining a specific capacity of 90.67 F·g⁻¹ even after 500 cycles at 1.0 mA·cm⁻² constant current charge-discharge and enjoying the cycling efficiency of 96.86%.

Key words [ionic liquid](#) [electrospinning](#) [polymer electrolyte](#) [electric double-layer capacitor](#) [ionic conductivity](#)

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