

Synthesis and performance of PEDOT/lignin composite electrodes for electrochemical energy storage

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The synthesis of conductive composite using pretreated lignin was performed in the form of lignosulfonates(LGS) to imitated PEDOT:PSS. Solubility of LGS was verified and synthesized PEDOT:LGS composite was characterized by fourier transform infrared and BET surface area measurement. The composite synthetic condition is presented synthetic requirements by electrochemical measurements. $\text{Na}_2\text{S}_2\text{O}_8$ plays a role as reaction initiator, indicating that it must be added for composite synthesis. In PEDOT:LGS ratio, the electrical performance was shown to be conformable performance near the 1:1 ratio. In neutral sulfonation Na_2SO_3 addition variables, at certain condition electrical performance trends had decreased. It is analyzed that the SO_3^{2-} ions produced by Na_2SO_3 form the matrix of conductive composite and SO_3^{2-} remaining ions decrease the electrical performance of the composite.