



Influence of solvent and its concentration on binding graphene with substrate in electric double layer capacitance

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ABSTRACT

EDL performances are highly influenced by the type of binder, solvent and its proportioning. The chloride removal efficiency of graphene was studied with binders like poly vinyl dene fluoride (PVdF), poly tetra fluoro ethylene (PTFE), polyvinyl pyrrolidone (PVP) and polystyrene sulfonic acid (PSA). In order to fix the graphene particles properly on to substrate material solvents like water, isopropyl alcohol, N-methyl pyrrolidone and dimethyl acetamide were used. The suitable type of binder and solvent was determined based on the chloride removal efficiency of graphene and the binding ability of the chosen material. Therefore PVdF and DMA are chosen as best binder material and solvent. The optimum proportion of PVdF and DMA was also determined based on electrochemical performance and stability of the electrode material. From this study, 12.5% of PVdF with graphene and 200% of DMA with PVdF is determined as optimal proportion of Binder and solvent proportion.

Keywords: EDL; Binder; Solvent; Chloride removal; Optimum proportion

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