

Electrosorption of Inorganic Ions on Pitch-based Carbon Electrode

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Carbon electrode was prepared by mixing extensively and drying the mixture which was made up of pitch precursor powder, 5wt% carbon black conductor and solution of a 10wt% Polyvinylidene fluoride (PVdF) binder in N-methyl pyrrolidinone (NMP), followed by chemical activation using given KOH solutions at boiling temperature as way to improve electrosorption properties. The microstructure of activated carbon electrodes was investigated using SEM and BET. The evaluation of the double layer capacitance was performed by means of potential sweep method in 0.5M NaCl solution. In order to measure removal rates of ions from wastewater, constant voltage at 1.0 ~ 1.4V was applied to self-fabricated CDI equipment. As a result, it was revealed that double layer capacitance and electrosorption of inorganic ions on the activated carbon electrodes increased as the concentration of KOH increased. This research was supported by a grant (4-4-1) from Sustainable Water Resources Research Center of 21st Century Frontier Research Program.