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Structural and Electrochemical Impacts of Oxygen Doped and Surfactant Coated Activated Carbon Electrodes in Li-ion Batteries JOHN COLLINS, GERALD GOURDIN, DEYANG QU, MICHELLE FOSTER, None — Passive charge and discharge dynamics are necessary for advancing Li-ion batteries. Surfactant adsorption on activated carbon has been shown to promote advancements in the discharge capacity, time and cycle-ability of electrochemical systems—specifically by enhancing diffusion pathways for ion insertion/de-insertion and suppressing pore blockage from precipitates known to form during charge/discharge states. Enhancement of surfactant chemisorption on activated carbon is achieved through oxygen doping of the carbon surface. In addition, doping alters the degree of Faradaic processes occurring in solution, resulting in prolonged reduction at the carbon surface**.** The work presented describes how surface oxygen groups on a granulated activated carbon have been manipulated using nitric acid in a controlled, stepwise fashion. A nonionic surfactant was applied to oxidized and non-oxidized samples at various concentrations. The composition and structure of the activated carbon surface was characterized using DRIFTS, Raman Spectroscopy, SEM and Porosimetry. The charge/discharge Li insertion capacities along with correlating surface microstructure changes were analyzed for all treated electrodes at progressive oxidation stages.

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None

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