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Impact of the Acid Treatment on Lignocellulosic Biomass Hard Carbon for Sodium-ion Battery Anodes

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Abstract

The investigation of phosphoric acid treatment on the performance of hard carbon from a typical lignocellulosic biomass-waste (peanut shell) is herein reported. A strong correlation is discovered between the treatment time and the structural properties and electrochemical performance in sodium-ion batteries. Indeed, a prolonged acid treatment enables the use of lower temperatures, i.e., lower energy consumption, for the carbonization step as well as improved high-rate performance (122 mAh g-1 at 10C).