



## Testing Biochar's Capacitive Properties

One result from ISTC's extensive biochar supercapacitor research was a quick and easy method to test the biochar's capacitive properties. Junhua Jiang and Nancy Holm of ISTC, along with Lei Zheng and Fangling Chen both from University of South Carolina tested three types of biochar supercapacitor electrodes – mini-chunk electrodes, thin-film electrodes, and large-disk-chunk electrodes – for supercapacitor applications. Both the mini-chunk and thin-film electrodes proved to have good capacitive performance (~30 F g<sup>-1</sup>) in two symmetrical electrode supercapacitors and no degradation after 2,600 CV cycles. However, the large-disk electrodes exhibited worse capacitive properties because of the large resistance caused by the long tubular channels. The capacitive performance of thin-film electrodes can be reproduced in the small monolith of mini-chunk electrode. Without using binders and other additives, the mini-chunk electrode technique provides a simple and fast method to evaluate various biochar materials for supercapacitor applications. The mini-chunk biochar supercapacitor can be directly used as an mF-scale supercapacitor power source.

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