

FLORIDA STATE UNIVERSITY  
FAMU FSU COLLEGE OF ENGINEERING

DEVELOPMENT OF NEW GENERATION HYBRID LITHIUM-ION BATTERY-  
CAPACITOR ENERGY STORAGE DEVICES

By  
MARK A. HAGEN

A Dissertation submitted to the  
Department of Electrical and Computer Engineering  
in partial fulfillment of the  
requirements for the degree of  
Doctor of Philosophy

2019

Mark defended this dissertation on April 17, 2019.

The members of the supervisory committee were:

Jim P. Zheng

Professor Directing Dissertation

Chiang Shih

University Representative

Petru Andrei

Committee Member

Simon Y. Foo

Committee Member

Hui Li

Committee Member

The Graduate School has verified and approved the above-named committee members, and certifies that the dissertation has been approved in accordance with university requirements.