REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. **PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.**

1. REPORT DATE *(DD-MM-YYYY)*
Date of Approval (when PA # issued)

2. REPORT TYPE
Briefing Slides

3. DATES COVERED *(From - To)*
9/25/2020.

4. TITLE AND SUBTITLE
Resistivity of Mesopore Confined Solvent Free Ionic Liquid Determined by Electrochemical Impedance Spectroscopy of Ordered Porous Carbon Nanotube Supercapacitors

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)
Gibson P. Scisco, Mark E. Orazem, Kevin S. Jones, Kirk J. Ziegler

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) AND ADDRESS(ES)
University of Florida
P.O. Box 116005
Gainesville, FL 32611

8. PERFORMING ORGANIZATION REPORT NUMBER
412TW-PA-20359

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)
412th Test Wing
195 E Popson Ave
Edwards AFB CA 93524

10. SPONSOR/MONITOR'S ACRONYM(S)
N/A

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT
Approved for public release A: distribution is unlimited.

13. SUPPLEMENTARY NOTES
NanoFlorida 2020, Miami, FL, 9/25/20

14. ABSTRACT
Detailed analysis of electrochemical impedance spectroscopy measurements of carbon nanotube/anodized aluminum oxide/silicon supercapacitors is presented. The highly ordered structure of the AAO allows for the extraction of in-pore resistivity of ionic liquids, which is found to be 5 times greater than bulk resistivity. These pores are 24.4 ± 4.6 nm in diameter, well into the mesopore regime and larger than other pore where increased resistivity has been reported.

15. SUBJECT TERMS
Carbon nanotubes, anodized aluminum oxide, ionic liquid, supercapacitor, electrochemical impedance spectroscopy

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
Unclassified			None	17	412 TENG/EN (Tech Pubs)
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**			**19b. TELEPHONE NUMBER** *(include area code)*
Unclassified	Unclassified	Unclassified			661-277-8615

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std. Z39.18