

CRADA Final Report

May 2016

Date 3/28/18**PI** Elton Cairns**CRADA No.** FP745 (AWD195)**LBNL Report Number** _____**OSTI Number** _____

1. Parties: California Clean Energy Fund (ZAF Energy Systems)
2. Title of the Project: Development of Li/S-GO Cells
3. Summary of the specific research and project accomplishments:
(Were the goals of the CRADA achieved? Include relevant information but do not include proprietary or protected CRADA information.) The goals of the project were achieved, including the transfer of the technology to an employee of the company.
4. Deliverables:

Deliverable Achieved	Party (LBNL, Participant, Both)	Delivered to Other Party?
Quarterly Reports	LBNL	Yes
Final Report	LBNL	Yes
Training of Company employee	LBNL	Yes

5. Identify publications or presentations at conferences directly related to the CRADA?
Ayako Kawase and Elton J. Cairns, Understanding the function of cetyltrimethyl ammonium bromide in Lithium/Sulfur Cells, *Journal of Materials Chemistry A*, 2017, **5**, 23094 – 23102, DOI: 10.1039/C7TA07522G

Yoon Hwa, Hyeon Kook Seo, Jong-min Yuk, and Elton J. Cairns, Freeze-Dried Sulfur–Graphene Oxide–Carbon Nanotube Nanocomposite for High Sulfur-Loading Lithium/Sulfur Cells, *Nano Letters*, 2017, DOI: 10.1021/acs.nanolett.7b03831

6. List of Subject Inventions and software developed under the CRADA: None
(Please provide identifying numbers or other information.)
7. A final abstract suitable for public release:
(Very brief description of the project and accomplishments without inclusion of any proprietary information or protected CRADA information.)
The development of the lithium/sulfur rechargeable cell was successfully continued with the 25-fold scale-up of the technology from coin cells to pouch cells.

This technology was successfully transferred to the NexTech Battery Company. This technology is expected to deliver over 300 Wh/kg in its commercial form.

8. Benefits to DOE, LBNL, Participant and/or the U.S. economy.
This technology is a significant advance in energy storage technology suitable for portable electronics and electric vehicles. It offers the possibility of establishing a new and advanced battery technology for US industry and for defense applications.

9. Financial Contributions to the CRADA:

DOE Funding to LBNL	\$ 0.00
Participant Funding to LBNL	\$ 1,107,000.00
Participant In-Kind Contribution Value	\$ 0.00
Total of all Contributions	\$ 1,107,000.00