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April 2012

STATEMENT OF WORK

Research and Development
and IC Postdoc Program Support

(b)(4)

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April 2012

STATEMENT OF WORK (SOW)

[redacted] Research and Development
and IC Postdoc Program Support.

(b)(4)

1.0 INTRODUCTION

1.1 Problem/Purpose Background

In recent contract and grant work, George Washington University (GWU) has investigated [redacted] materials for use as lithium-ion electrodes and supervised several IC postdocs. The current SOW expands the scope of this research and development and adds tasking for IC postdoc program support.

(b)(4)

The Sponsor's Contract Officer's Technical Representative (COTR) will oversee the technical progress of this contract. The GWU team working on this project is encouraged to maintain close and continuing contacts with the designated COTR.

1.2 Project Objectives.

The objectives of this project are to investigate the incorporation of [redacted] materials into solid state ceramic batteries to improve the ionic and electron flows, investigate the incorporation of tin and silicon within the HCNS materials to increase the capacity of lithium-ion electrodes, and provide support to the IC postdoc program.

(b)(4)

1.3 Scope of Work

This effort is expected to require approximately [redacted] for a non-severable period of one year. Please note that a combination of graduate students, undergrads, postdoctoral student(s), plus subcontracts within GWU and with other Universities, supervised by a professor acting as principle investigator (PI), is expected to be required).

(b)(3)

2.0 APPLICABLE DOCUMENTS

n/a

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3.0 CONTRACTOR TASKS

3.1 Technical Requirements and Contractor Tasks

GWU shall provide a PI who will supervise this research and development activity. In addition to supervising the GWU research team, the PI shall oversee subcontracts within GWU and with other Universities, and also oversee communications and interactions with the COTR to maintain close and continuing communications and updates on progress and financial status of this effort. GWU shall furnish the necessary services, labor, personnel, facilities, supplies, materials and equipment to satisfy the listed tasks.

The following tasks shall be completed through this project:

- 3.1.1. Investigate, research, and develop methods to incorporate [redacted] materials into solid state ceramic batteries to improve the ionic and electron flows. Work in conjunction with the COTR and multi layer ceramic developers to coordinate material parameters and evaluation procedures and testing. (b)(4)
- 3.1.2. Investigate, research, and develop methods to [redacted] to increase the capacity of lithium-ion electrodes. In particular, explore the abilities of [redacted] as battery electrodes. Acquire production capabilities for the [redacted] and modify these [redacted]. Test and characterize these materials to determine the capacity and structural characteristics of the resulting materials. (b)(4)
- 3.1.3. Provide support to the IC Postdoc program in conjunction with the COTR to include equipment purchases, technical support, and subcontracts internally within GWU and with other universities to support GWU and IC postdocs and their research programs. (b)(4)

3.2 Reporting Requirements and Deliverables

The PI and coworkers shall maintain close and continuous communications and interactions with the COTR.

- 3.2.1 The PI, coworkers, and subcontractors shall publish their research in peer-reviewed academic Journals and/or the Journal of Intelligence Community Research and Development (JICRD) and present their work at scientific meetings (see 3.4 below). For articles published in academic Journals, permission to republish in JICRD shall be requested and obtained. Published material shall contain an acknowledgement of the Government's support and disclaimer as follows:

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"This material is based upon work funded in whole or in part by the U.S. Government and any opinions, findings, conclusions, or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the U.S. Government."

- 3.2.2 A Contract Status Report, including financial status and an executive summary of the technical achievements of the preceding month, plus plans for upcoming time periods, shall be submitted to the Contracting Officer monthly; a copy shall also be FAXed to the COTR at [redacted]. These monthly reports shall be submitted not later than 15 calendar days after the close of each month. Such report shall be in the format as provided in Attachment A. The most recent invoices submitted, reflecting the period covered by the monthly report, shall be an attachment to the report. (b)(3)
- 3.2.3 A briefing shall be given at the midway point for this project that presents progress to date and future plans. At project conclusion, a final report and briefing shall be delivered to the Sponsor. Three copies of a final report, along with an electronic copy, will be submitted to the Sponsor at the end of the contract. The final briefing shall include an technical overview of the results of the research. It shall also provide further research recommendations to pursue in this technical field. The contractor shall provide an electronic version of the review briefing in a standard (Microsoft Powerpoint, *.ppt, or Adobe display interchange, *.pdf) electronic format to the Sponsor at least one week prior to the scheduled technical reviews. Reviews shall be provided to the COTR either at the research facility or in the Washington D.C. area.
- 3.2.4 Throughout the course of this work, GWU shall provide representative samples and explanatory exhibits that demonstrate the performance of the developed [redacted] electrodes and the postdoc activities and summarize the progress towards the goals of this project. (b)(4)

3.3 Schedule

The contractor shall propose a mutually agreed schedule of milestones, task requirements, and critical delivery dates, including a scheduled control gate meeting between tasks.

3.4 Special Considerations

GWU's PI shall coordinate with the COTR and Contracting Officer regarding any publication/talk before submission.

3.5 Period and Place of Performance

The research tasks shall be conducted at GWU, Washington, D.C. and at other subcontractor locations. The period of performance will be one year from contract award.

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4.0 SECURITY

The Association of this effort is **UNCLASSIFIED**. All Work, Data, Reports and other documentation generated under this contract will be **UNCLASSIFIED**. There is no Hardware associated with this effort.

As an academic institution and/or affiliated research institution, the Contractor shall identify any and all personnel who are foreign nationals (personnel who are not United States citizens or Permanent Resident Aliens) that are proposed to perform work under this contract in a prime contractor and/or subcontractor capacity. The Contractor must receive written approval from the Contracting Officer prior to allowing any foreign nationals to work on this contract.

5.0 GOVERNMENT FURNISHED PROPERTY

No Government Furnished Material, Information, or Property is to be supplied to the contractor.

6.0 ENVIRONMENTAL, SAFETY AND HEALTH

6.1 Documentation of Compliance to Regulations

Contractor to provide Sponsor with documentation of compliance with the following regulations, if applicable, on request:

1. OSHA Laboratory Safety Standard (29 CFR 1910.1350),
2. Centers for Disease Control, Additional Requirements for Facilities Transferring or Receiving Select Agents (42 CFR Part 72),
3. DOT Hazardous Materials Regulations (49 CFR Subchapter C, Parts 171 to 180),
4. EPA Resource Conservation and Recovery Act (40 CFR 260 to 299, hazardous waste provisions),
5. Industrial Wastewater Permit requirements of the local Publically Owned Treatment Works (POTW), and
6. Permit requirements under the National Pollutant Discharge Elimination System as specified in the Clean Water Act.

6.2 Compliance with Environmental Laws

(a) The Contractor shall comply with the Resource Conservation and Recovery Act, as amended, (42 U.S.C. §§ 6901-6992k) and regulations promulgated thereunder including, but not limited to, the regulations issued by the Administrator

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of the Environmental Protection Agency (EPA) at 40 C.F.R. pts. 260-299; the Comprehensive Environmental Response, Compensation and Liability Act, as amended, (42 U.S.C. §§ 9601-9675) and regulations promulgated thereunder, including but not limited to, the regulations issued by the Administrator of the EPA at 40 C.F.R. pts. 300-374; the Hazardous Materials Transportation Act, as amended, (49 U.S.C. §§ 5101-5127) and regulations promulgated thereunder; the Occupational Safety and Health Act, as amended, (29 U.S.C. §§ 651-678) and regulations promulgated thereunder; applicable guidance promulgated by the EPA; laws and regulations governing hazardous waste, releases to the environment, and safety that were promulgated by any state in which the hazardous waste will be transported through until ultimate disposal. Noncompliance shall be grounds for termination of this contract in accordance with its default provisions.

(b) The Contractor shall insert this clause, including paragraph (b), in all subcontracts, with appropriate changes in the designation of the parties.

Notice Requirements: (a) Contractor shall provide telephone notice to the Contracting Officer's Technical Representative (COTR) within 24 hours and written notice within five business days of any of the following:

- (1) any releases to the environment in any way connected to performance of this contract;
- (2) any Notice of Violations the Contractor receives from any federal, state, or local regulatory authority;
- (3) any enforcement actions commenced against the Contractor by any federal, state, or local regulatory body;
- (4) any listing of facilities owned or operated by Contractor on the National Priorities List;
- (5) any response action taken pursuant to the Comprehensive Environmental Response Compensation Liability Act, as amended, 42 U.S.C. § 9601 et. seq. at any facility owned or operated by the Contractor;
- (6) any citizen suit commenced against the Contractor.

The Contractor shall insert this clause, including this paragraph (b) in all subcontracts, with appropriate changes in the designation of the parties. The Contractor shall notify the Contracting Officer's Technical Representative in accordance with paragraph (a) of this clause upon receipt of notice by the subcontractor.

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**ATTACHMENT A
Monthly Status Reporting Outline**

I. COST

A.

Add dollars and hours here.

	(\$)	(hrs)
Total funds/hours authorized		
Funds/hours expended to date		
Funds remaining		
% of total funds/hours remaining		

B. Schedule activity cost status (For each schedule activity, provide the scheduled period and use the formula above to show its cost status. Other Direct Cost (ODC) such as travel, equipment/materials expenditure will be also reported.

Add schedule activity cost status information here.

C. "As of (date), the above funding is is not adequate to complete this contract." (If not adequate, elaborate with an estimate of when funding will run out and what additional funds are projected to be necessary to complete the contract.)

Add additional detail here.

II. SCHEDULE

A. Provide the best estimate of completion status of each item using time-line projection. (Quarterly report only.)

Add estimate of completion status information here.

B. For each schedule deviation, explain the cause, state when it was discussed with the COTR, and the agreed or proposed recovery plan.

Add additional explanation of schedule deviation here.

C. "The best overall estimate of work completed is [%] as of [date]."

Add additional explanation on estimate of work here.

III. NARRATIVE

Comments on significant events during the reporting period and significant upcoming events. Associate the comments with the schedule items.

Add additional explanation on estimate of work here.

IV. ACTION ITEMS

A. List of Action Items assigned to the contractor and their current status.

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Add additional explanation on Action Items assigned to the contractor here.

B. List of Action Items expected from the Government or by others, and their status. Indicate the specific source of this information.

Add additional explanation on Action Items assigned to the contractor here.

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