Opportunity Title: Advanced Energy Storage and Generation for Satellites
Opportunity Reference Code: IC-17-16

Organization Office of the Director of National Intelligence (ODNI)

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How to Apply **Create and release your Profile on Zintellect** – Postdoctoral applicants must create an account and complete a profile in the on-line application system. **Please note: your resume/CV may not exceed 2 pages.**

Complete your application – Enter the rest of the information required for the IC Postdoc Program Research Opportunity. The application itself contains detailed instructions for each one of these components: availability, citizenship, transcripts, dissertation abstract, publication and presentation plan, and information about your Research Advisor co-applicant.

Application Deadline 3/31/2017 11:59:00 PM Eastern Time Zone

Description **Research Topic Description, including Problem Statement**:

Satellite performance today is limited by the amount of power that can be generated and stored onboard the vehicles. Adding to the issue is that and weight and size are critical limiting factors to consider. Lithium-ion technology is just being incorporated, however issues with charge balancing and limited depth of discharge are serious limitations. Also, the long-term reliability of such systems has not been established to determine if this is the best path forward for this technology.

Example Approaches:

Successful proposals could investigate advanced methods of energy storage and generation for use in satellites. Proposed solutions will be compared against approaches currently used via experimentation and/or modeling.

While space and weight are important, present lithium-ion systems offer an energy density of up to 600 W-h/L, specific power of 300 W/kg and a charge/discharge efficiency of 90% at voltage of 3.5 V or greater. Successful proposals would be able to achieve at least these results, if not improve upon them.

Proposals might also consider these novel approaches:

- Super capacitors that could replace batteries or new battery technologies such as magnesium batteries, gold nanowire batteries, sodium ion batteries, copper foam batteries, solid state batteries (reference MIT work) or solid state lithium batteries are topics of interest.
- Solar cell technologies such Perovskite- enhanced or multi-junction offers the potential of significant improvement.
- The use of radio-isotopes for power generation offers the potential for the elimination of solar panels but presents other challenges.

Eligibility

- **Citizenship:** U.S. Citizen Only

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Requirements

- **Degree:** Doctoral Degree.
- **Discipline(s):**
  - **Business** (11 👁)
  - **Chemistry and Materials Sciences** (12 👁)
  - **Communications and Graphics Design** (6 👁)
  - **Computer, Information, and Data Sciences** (16 👁)
  - **Earth and Geosciences** (21 👁)
  - **Engineering** (27 👁)
  - **Environmental and Marine Sciences** (14 👁)
  - **Life Health and Medical Sciences** (45 👁)
  - **Mathematics and Statistics** (10 👁)
  - **Other Non-Science & Engineering** (13 👁)
  - **Physics** (16 👁)
  - **Science & Engineering-related** (1 👁)
  - **Social and Behavioral Sciences** (28 👁)