

Opportunity Title: Chemical Processes for Multi-functional Carbon Nanotube Structures

Opportunity Reference Code: IC-16-22

Organization Office of the Director of National Intelligence (ODNI)

Reference Code IC-16-22

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 4/15/2016 6:00:00 PM Eastern Time Zone

Description The need exists for multi-functional constructs that provide both strength and conductivity in a single material. Individual Carbon Nanotubes (CNTs) demonstrate extraordinary strength (>50 GPa) and conductivity (>1x10⁸ S/M). Domestic high-volume CNT production now exists but material constructs (yarns and sheets), that are an agglomeration of billions of CNTs, do not yet achieve the needed multi-functional capabilities. Today's chemistry yields high strength or high conductivity but never in the same construct.

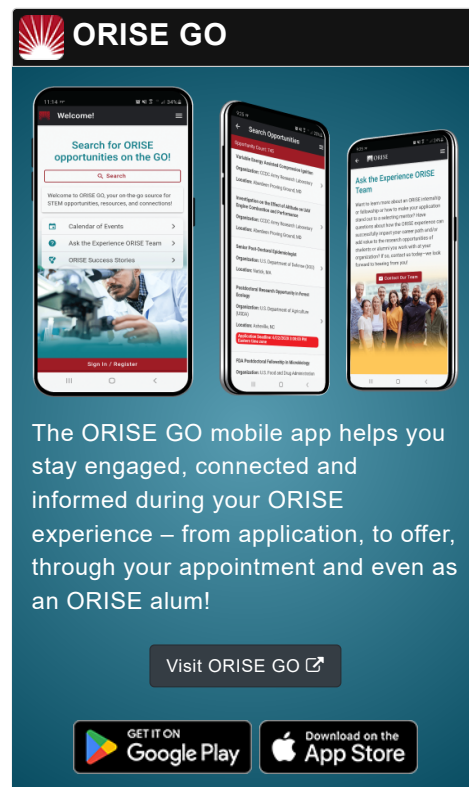
The goal of this effort is to demonstrate high-volume processing of multifunctional CNTs with combined high tensile strength and high conductivity. Approaches that show improvements over the current state-of-the-art are sought. For example, tensile strength in the range of 7 GPa combined with conductivity in the range of 6 x 10⁷ S/m, for one-kilometer spools of yarn and large sheets (8 ft x 4 ft), would be of particular interest.




Example Approaches:

Example approaches include post-process mechanical calendaring and drawing, chemical doping, and chemical functionalization and resin impregnation.

- Eligibility Requirements**
- **Citizenship:** U.S. Citizen Only
 - **Degree:** Doctoral Degree.
 - **Academic Level(s):** Postdoctoral.
 - **Discipline(s):**
 - **Business** (11 👁)
 - **Chemistry and Materials Sciences** (12 👁)
 - **Communications and Graphics Design** (6 👁)
 - **Computer, Information, and Data Sciences** (16 👁)





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- **Physics** (16 )
- **Science & Engineering-related** (1 )
- **Social and Behavioral Sciences** (28 )