

## Technology Area: Carbon Nanotube Synthesis via a Diffusion Flame as a Continuous Aerosol Reactor GRC Point of Contact: Randy Vander Wal

- **Description of Technology:** The plan is to transfer our carbon nanotube (CNT) synthesis capability within a premixed flame system (which served as a laboratory testbed) to a diffusion flame system and optimize conditions.
- **Potential Applications:** Aero, auto, high temp devices, thermal mgt, energy storage: Reinforcement Additive for Advanced Polymers and Ceramics, Gas Storage Material for Aerospace Transportation and Power Generation (Fuel Cells), Electromagnetic Shielding for Advanced Polymers and Ceramics, Electrostatic Charge Dissipation for Advanced Polymers and Ceramics, Reactant (Conversion) Material for Thermal Barrier Coating, Thermal Management Materials for Advanced Metallics, Electrochemical Energy Storage for Li+ ion Batteries, Catalyst support material in Fuel Reformers for Fuel Cells
- **Relevance to Space Exploration:** Fuel Cells, Energy Storage, Structural materials, Radiation Shielding.
- **Industry Co-developers and Industry Consumers:** NanoDynamics, MetaMateria, specifically, composite manufacturers in general.
- **Current TRL Level:** 2
- **Technical Risks Associated with Implementation:** Plan to transitional to diffusion flame and scale up straight forward.
- **IP Position:**
  - Non Disclosure with NanoDynamics
  - Vander Wal is a USRA employee, USRA has first right of refusal to protect IP but has not shown interest to pursue to date

