RX14-10

Attachment 1 – Research Topic Template

1. **Research Title:** Artificial Hair Flow Sensors
2. **Individual Sponsor:**

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3. **Academic Area/Field and Education Level:** Materials Science & Engineering, Mechanical Engineering, Chemical Engineering, Chemistry, Physics, Polymer Science, or closely related field. BS/BA level preferred.
4. **Objectives:** Research and develop artificial hair flow sensors for applications in small and/or agile autonomous vehicles. Project will develop device architecture and evaluate sensor response to mechanical and aerodynamic loading. Structure – property relations of the fiber will be determined to optimize sensor performance.
1. **Description:** Student will undertake study to grow and assemble artificial hair sensors with an emphasis on microstructural control of carbon nanotubes. Student will utilize a combination of analytical techniques (nanoindentation, electron microscopy, optical microscopy, wind tunnel testing) to elucidate structure property relations of the sensing material. Student is expected to learn to operate experiments independently, take initiative in pursuing goals, analyze data and recommend further action.
5. **Research Classification/Restrictions:** Research will be unrestricted and submitted for publication in the scientific literature at the Unclassified level.
6. **Eligible Research Institutions:** Indicate to what organizations this topic should be provided.

■ DAGSI (Wright State University, AFIT, Ohio State University, University of Dayton, Miami University, Ohio University, University of Cincinnati)
PA Approval #: 88ABW-2013-3436

☐ AFIT (only)

☐ USAFA (only)
If you are submitting a topic for the USAFA, please indicate if you are also interested in sponsoring a USAF Cadet in summer of 2013 **(Avg Cost for USAF Cadet for 33 days was $5000)**
☐ Yes No ☐