

Attachment 1 – DAGSI Research Topic Template

NOTE: Under the Cooperative Agreement, Technical Directorates have three options for topics. First, a topic can strictly be considered in the pool for the state allocation of funding. DASI will work across the TDs for this allocation. Second, the TD can be prepared to be a funding partner with the State of Ohio. This would include: providing additional funds to support additional recipients of a topic, or expand the proposers team to include additional members on a topic. Third, the TD may elect to fully fund a topic not selected for State of Ohio funding or to pursue University teams outside the State of Ohio. Contact Michael.hitchcock.3@us.af.mil for questions

1. **Research Title:** Development and Behavior of High-Temperature Ceramic Matrix Composites
2. **Individual Sponsor:**
Dr. Michael K. Cinibulk
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3. **Academic Area/Field and Education Level:** Materials Science Engineering (MS or PhD level)
4. **Objectives:** 1) Develop fundamental understanding of the science necessary to develop novel fibers, fiber coatings, and matrices for ceramic matrix composites for improved temperature capability and environmental durability 2) Investigate effects of service environment, at the constituent level, on CMC behavior and life.
5. **Description:** Numerous fundamental scientific issues remain to be addressed to enable the development of a full range of high-performance ceramics and ceramic-matrix composites for Air Force air and space applications. These issues encompass basic design, new constituents, compatible chemistries, and enabling processes for oxide and nonoxide ceramic matrix composites. Current research focuses on investigating higher temperature nonoxide fiber and matrix constituents for enhanced durability, continuing development of oxide fiber coatings and interface control, developing fabrication processes specifically for nonoxide composites, investigating the stability of constituents in aggressive environments, and developing design methodologies for durable composites. Modeling of ceramic matrix composite fabrication processes is of particular interest. Intended service environments for these composites include turbine engines and scramjet engines, as well as hot structures and thermal protection systems for high-speed flight.
6. **Research Classification/Restrictions:** Unclassified/No restrictions
7. **Eligible Research Institutions:** All

NOTE: Topics submitted to DAGSI must be approved for public release. Need PA Approval #