DARPA-BAA-16-36

Magnetic Miniaturized and Monolithically Integrated Components (M3IC)

Frequently Asked Questions

Q: Are materials and film thicknesses other than those specified in TA1 allowed for TA3 proposals?

A: The M3IC BAA does not specify a preferred material or thickness for TA3. Page 13 of the BAA states: “Proposers must provide a technical rationale for any proposed metrics, a comparison to relevant current art, assumptions used, and technical pathway for achieving the proposed metrics."

Q: Are performers limited to the components shown in Table 2?

A: No, other monolithically integrated components may be proposed as a demonstration vehicle for TA1 with appropriate metrics suggested by the proposer. Other DoD-relevant components such as SNEs may be proposed for development and optimization in TA3 with appropriate metrics suggested by the proposer. Proposers must provide a technical rationale for any proposed metrics, a comparison to relevant current art, assumptions used, and technical pathway for achieving the proposed metrics.

Q: Is there a preference for the type of semiconductor substrate used?

A: There is no preference for the type of semiconductor, but a reason should be provided explaining the material choice in the context of the chosen component and technology application area.

Q: Is there a specific upper temperature limit for depositing magnetic films on semiconductor substrates?

A: The ultimate goal of TA1 is the wafer-level integration of magnetic components on semiconductor substrates. No specific maximum process temperature for film growth is specified, however the process must result in high-quality magnetic films without adversely affecting the semiconductor substrates.

Q: Are integrated magnetic materials with parameters other than those specified in Table 2 of the BAA-16-36 of interest?

A: The ultimate goal of TA1 is the wafer-level integration of magnetic components on semiconductor substrates. Page 9 of the BAA states: “Other magnetic materials and deposition techniques capable of exceeding the minimum magnetic properties and semiconductor process compatibility requirements also will be encouraged.” Page 11 of the BAA states: “Proposers must provide a technical rationale for any proposed metrics, a comparison to relevant current art, assumptions used, and technical pathway for achieving the proposed metrics. Proposals must provide milestones for each phase to address the goals described in Table 1 and the metrics provided in Table 2. All proposals should provide a technical

rationale for the proposed program milestones and a clear trajectory to achieving the program goals and metrics." The technical approach is at the discretion of the proposer and will be evaluated in accordance with the criteria outlined in the BAA after the proposal submission deadline.

Q: Is post-processing integration of magnetic films onto semiconductor substrates of interest to BAA-16-36?

A: Batch fabrication with magnetic film and component processing occurring at the wafer level, as opposed to after die singulation, will be considered monolithic integration and of interest to BAA-16-36.

Q: Does TA1 Phase 2 require delivery of five different integrated component types?

A: TA1 Phases 2 & 3 deliverables include five samples of each proposer-selected component. Only a single component type is required, however more than one type or design is also allowed.

Q: Are magnetic MEMS devices of interest to BAA-16-36?

A: MEMS devices are not of interest to the M3IC program.

Q: What film-growth and processing techniques are considered responsive to BAA-16-36?

A: The BAA states: "The primary goal is to grow and pattern high-quality, uniform, thick, and temperature-stable magnetic films on standard semiconductor wafers while preserving the properties of both the magnetic films and the semiconductor circuitry." Ultimately, the program will advance processing science and technology to simultaneously increase the film thickness of magnetic materials to 200 µm on wafer sizes up to 100 mm.

Q: Are US government personnel allowed to be team members?

A: Federally Funded Research and Development Centers (FFRDCs) and Government entities (e.g., Government/National laboratories, military educational institutions, etc.) are subject to applicable direct competition limitations and cannot propose to this BAA in any capacity unless they meet the conditions outlined in section III.A. of the BAA.