

1. **Research Title:** Dielectrics for high-power, high-frequency β -Ga₂O₃ transistors
2. **Individual Sponsor:** List the AFRL research topic sponsor's contact information

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3. **Academic Area/Field and Education Level**
Electrical Engineering (MS or PhD level)
4. **Objectives:** Enhance performance of β -Ga₂O₃ transistors by optimizing dielectric and interface properties
5. **Description:** Transistors made with β -Ga₂O₃ are promising candidates for next-generation power electronics and RF devices. Various oxides have been explored as gate insulators for these devices. A general requirement for these oxides is to have a good interface with the semiconductor and this interface needs to have low defect density and sufficient energy barrier to allow free carriers to pile-up near the interface with negligible injection of carriers into and/or through the oxide. In this research, we will explore a range of dielectric options for β -Ga₂O₃ transistors, fabricate these devices in a class 100 (ISO-5) cleanroom, characterize them using novel electronic and optical methods and hence optimize transistor performance.
6. **Research Classification/Restrictions:** Unclassified.
7. **Eligible Research Institutions:** All the research universities in the state of Ohio.