

- 1- **Research title:** Ga<sub>2</sub>O<sub>3</sub> for high power devices
- 2- **Individual Sponsor:**  
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- 3- **Academic Area/ Field and Educational Level:** Physics, Applied Physics, Materials Science Engineering (MS or PhD level).
- 4- **Objectives:** Recent investigations have revealed the great potential of  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> films for high power devices due to its high breakdown voltage and large band gap. The goals of this project are to investigate the fundamental properties of Ga<sub>2</sub>O<sub>3</sub> and develop high quality films of n type Ga<sub>2</sub>O<sub>3</sub> for high power transistors.
- 5- **Description:** Epitaxial  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> films will be grown homoepitaxially and heteroepitaxially and their structural, optical and electrical properties will be investigated. The research should improve our understanding of the fundamental electronic properties and the role of defects and dopants. We are interested in applying a wide range of characterization methods and experimental techniques to provide information about defects and electronic properties. Based on the obtained knowledge, growth parameters should be optimized and high quality films can be developed.
- 6- **Research Classification/Restrictions:** No restrictions
- 7- **Eligible Research Institutions:** Universities (DAGSI), AFIT