

**Research Development Fund – Fall FY16 Cover Page**

**SUBMISSION DEADLINE: September 15, 2015 at 12 noon CDT to [rdf@tamu.edu](mailto:rdf@tamu.edu)**

(All cover pages will be posted for the campus community to view at <http://rdf.tamu.edu/abstracts>)

**Proposal Title: Texas A&M University Optical Diagnostic and Imaging Facility**

**Lead contact:**

Name: Waruna Kulatilaka  
Department: Mechanical Engineering  
Email address: waruna.kulatilaka@tamu.edu  
Phone number: (937)-458-2885

**Key Participating Units\*:**

- College of Engineering (Aerospace, Biomedical, Chemical, Mechanical, Nuclear, Petroleum)
- College of Science (Chemistry, Physics & Astronomy)
- College of Agriculture and Life Sciences (Bio and Ag Eng, Nutrition and Food Science)
- Other TAMUS Entities (Prairie View A&M, West Texas A&M)
- Other In-state Collaborators (Texas Tech University)

**Anticipated Request Amount (\$): \$1.65M**  
***(Matching Funds: \$450k, Total Project Cost: \$2.1M)***

**Executive summary of the intended proposal.**

We propose a state-of-the art, ultra-high-speed optical diagnostic and imaging facility be established within the TAMU-College Station campus in order to facilitate energy-related preeminent R&D needs in combustion, aerothermochemistry, propulsion, fuels (traditional as well as alternative and biofuels), energetic materials, fluid dynamics, and plasma technology. Existing laser diagnostic and imaging capabilities as well as expertise are scattered across multiple research units and also lacking the state-of-the-art instrumentation and synergy to tackle large-scale multi-disciplinary research initiatives. The proposed, Texas A&M University-Optical Diagnostics and Imaging Facility will be based on cutting-edge ultra-high-repetition-rate laser technology and high-frame-rate cameras that have become commercially available in recent years. Such a facility will be an integral part to bring together inter-disciplinary research teams to better understand and model phenomena such as ultra lean combustion, aircraft and rocket propulsion, high-speed flow physics, chemical kinetics of biofuels, and novel plasma applications, among others. The proposed diagnostic facility will be housed within a recently renovated TEES optics laboratory and will be readily accessible by multiple end users. The key team is comprised of world-class experts with proven track record in attracting and managing large-scale research projects and facilities. The proposed facility and associated synergetic collaborative will significantly increase our competitiveness in follow-on externally funded research programs from agencies such as DoD, DOE, NASA, NIH, NSF as well as numerous industry partners.