



## Grant Deliverables and Reporting Requirements for UTC Grants

<b>UTC Project Information</b>	
Project Title	Smart Sensors to Reduce Pollutant Emissions in Transportation
University	The University of Texas at El Paso (UTEP)
Principal Investigator	Ramana Chintalapalle
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Funding Source(s) and Amounts Provided (by each agency or organization)	USDOT: \$60,000 UTEP: \$46,070
Total Project Cost	\$106,070
Agency ID or Contract Number	Sponsor Source: Federal Government CFDA #: 20.701 Agreement ID: 69A3551747119
Start and End Dates	 Start date: 1/16/2018  End date: 2/15/2019
Brief Description of Research Project	Today's automobiles lack flexibility in design and contribute to the major portion of pollution. This project intends to design, develop, characterize, and demonstrate the feasibility of smart sensors for utilization in advanced transportation and reduce pollution. The project objectives are: (1) To fabricate oxygen sensors for combustion engines, (2) Demonstrate the temperature independent and smart characteristic features of sensors for emission control and fuel efficiency in transportation systems. This is the first year of a multi-year project. The methodologies to be developed are expected to be applicable in a broader context.
Describe Implementation of Research Outcomes (or why not implemented)	<b>Outputs:</b> Ba-containing complex oxide ceramics, Ba(Fe <sub>0.7</sub> Ta <sub>0.3</sub> )O <sub>3-δ</sub> (BFTO30), a material useful for oxygen sensor have been fabricated.
Place Any Photos Here	<b>Outcomes:</b> Thermal property of BFTO30 ceramics had been tested in the laboratory to prove their temperature independence at 1200 to

	1350 °C. This is a critical characteristic of sensors used in combustion engines.
Impacts/Benefits of Implementation (actual, not anticipated)	This research has demonstrated the feasibility of Ba(Fe <sub>0.7</sub> Ta <sub>0.3</sub> )O <sub>3-δ</sub> (BFTO30) ceramics as a stable, high temperature independent material for use in oxygen sensor. This material has the potential to be used to manufacture sensors that are used in combustion engines to control the optimal oxygen intake for improve engine efficiency and reduce emissions.
Web Links • Reports • Project website	<a href="http://ctech.cee.cornell.edu/final-project-reports/">http://ctech.cee.cornell.edu/final-project-reports/</a>