



The University of Texas at Austin Academic Alliance Thrust Areas

April 18, 2016

Amanda Dodd, UT Partnerships Manager

Exceptional service in the national interest



**Sandia
National
Laboratories**



Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000. SAND NO. 2011-XXXXP

Thrust/Focus Areas*

*These may shift and grow

Computational Engineering Science

- Predictive Science: Model validation and uncertainty quantification
- Extreme scale computing: Large scale inverse problems and fast algorithms
- Integration of experimental, modeling, and uncertainty assessments
- R&D related but not limited to the following applications: high speed flows, combustion, porous media, fluid-structure-interaction, fracture, electromagnetics, multi-scale, etc.

Geosciences

- Nanotechnology applied to geosciences to improve measurement, mapping and manipulation of subsurface permeability and porosity
- Detection of induced seismicity and estimation or mitigation of consequences
- Measurement and analysis of methane emissions from oil and gas operations

Energy Sustainability

- Materials reliability and performance, e.g. structural materials (fly-wheels, wind turbines), solar absorbent materials, corrosion protection, etc.
- Grid/microgrid systems, virtual power plants, etc.
- Thermal energy storage

Power on Demand

- Battery-based electrical energy storage
- Materials for power electronics

Advanced Manufacturing

- Electronic and photonic materials and sensors
- 3D printing
- Direct write of nanomaterial inks
- Small lot and agile manufacturing concepts addressing qualification and reliability
- Process controls and materials assurance

Nanodevices and Microsystems

Secure, trusted microelectronics
Optoelectronics of the future
Ultraportable, multi-function sensors

Current Investments (FY16 LDRD)



Project Title	Sandia POC	University Collaborator
Additively Manufactured Shock Absorbing Engineered Materials	Nicolas Leathe	Carolyn C. Seepersad, ME
Integrating Domain Expertise with Machine Learning for Turbulence Model Development	Srini Arunajatesan	Bob Moser, ME, ICES Todd Oliver, ICES
Geomechanics of Induced Seismicity in CO2 Reservoirs	Pania Newell	Peter Eichhubl, Jackson
Plasmonic Metasurfaces on Graphene for Voltage Tunable Spectral Filtering in the Infrared	Igal Brener	Gennady Shvets, Physics
Metamaterial Receivers for High Efficiency Concentrated Solar Energy Conversion	Ryan Anderson	Andrea Alu, ECE

Note: There are many more activities that are ongoing between UT Austin and Sandia