

## Department of Energy Announces \$37 Million for Materials and Chemistry Research in Quantum Information Science

### *Both Universities and National Laboratories Will Lead Projects*

WASHINGTON, D.C. – Today, the **U.S. Department of Energy (DOE)** announced \$37 million in funding for targeted research in materials and chemistry to advance the important emerging field of Quantum Information Science (QIS).

QIS seeks to exploit intricate quantum mechanical phenomena to create fundamentally new ways of obtaining and processing information. It is expected to play an increasingly important role in the information technology of the future, with the promise of potentially powerful new capabilities in computing, networking, and sensing.

The current initiative includes projects aimed at synthesizing and observing material and chemical systems with exotic quantum properties as well as efforts to use quantum computing to better understand complex material and chemical systems.

The goal is both to lay the groundwork for the development of new quantum information systems and to use current quantum information capabilities to advance research in material and chemical sciences.

Details of awards selected for negotiation are shown below:

PI	Institution	City, State	Proposal Title
<b>Ashoori, Raymond</b>	Massachusetts Institute of Technology	Cambridge , MA	Creating and Probing Large Gap 2D Topological Insulators for Quantum Computing
<b>Clark, Bryan</b>	University of Illinois	Champaign, IL	Porting classical approaches for quantum simulations to quantum computers
<b>Coker, David</b>	Boston University	Boston, MA	Control of Energy Transport and Transduction in Photosynthetic Down-Conversion
<b>Fu, Kai-Mei</b>	University of Washington	Seattle, WA	Quantum entanglement between a solid-state spin and trapped ion via a photonic link
<b>Hen, Itay</b>	University of Southern California	Marina del Rey, CA	Resource-Efficient Quantum Simulations on NISQ Devices: Advancing the State-of-the-Art
<b>Hill, Stephen</b>	Florida State University	Tallahassee, FL	A Route to Molecular Quantum Technologies Using Endohedral Metallofullerenes
<b>Hoffman, Jennifer</b>	Harvard College	Cambridge, MA	Design & Assembly of Atomically-Precise Quantum Materials & Devices
<b>Kolkowitz, Shimon</b>	University of Wisconsin	Madison, WI	Quantum probes of the materials origins of decoherence
<a href="#">National Laboratory Subaward</a>	<a href="#">Lawrence Livermore National Laboratory</a>	<a href="#">Livermore, CA</a>	<a href="#">Quantum probes of the materials origins of decoherence</a>

PI	Institution	City, State	Proposal Title
<b>Lawrie, Benjamin</b>	Oak Ridge National Laboratory	Oak Ridge, TN	Nanoscale quantum and classical sensing for superconducting and topological quantum information
<b>Lyon, Stephen</b>	Princeton University	Princeton, NJ	Materials for Ultra-Coherent, Mobile, Electron-Spin Qubits
National Laboratory Subaward	Sandia National Laboratories (SNL)	Albuquerque, NM	Materials for Ultra-Coherent, Mobile, Electron-Spin Qubits
<b>Manfra, Michael</b>	Purdue University	West Lafayette, IN	Direct Observation of Fractional Quantum Hall Quasiparticle Braiding Statistics via Interferometry
<b>Martinez, Todd</b>	SLAC National Accelerator Laboratory	Menlo Park, CA	Hybrid Quantum/Classical Algorithms for Photochemistry and Nonadiabatic Dynamics
National Laboratory Subaward	Oak Ridge National Laboratory (ORNL)	Oak Ridge, TN	Hybrid Quantum/Classical Algorithms for Photochemistry and Nonadiabatic Dynamics
<b>Painter, Oskar</b>	California Institute of Technology	Pasadena, CA	Enhancing Entanglement: Non-Markovian and Floquet Reservoir Engineering in Many-Qubit Superconducting Quantum Circuits
<b>Richerme, Philip</b>	Indiana University	Bloomington, IN	An Ion-Trap Quantum Simulator for Exotic 2D Materials
<b>Schelter, Eric</b>	University of Pennsylvania	Philadelphia, PA	Expressing Tunable Emergent Quantum Phenomena in Molecular Materials with Strong Electron Corrections
National Laboratory Subaward	Lawrence Berkeley National Laboratory	Berkeley, CA	Expressing Tunable Emergent Quantum Phenomena in Molecular Materials with Strong Electron Corrections
<b>Shultz, David</b>	North Carolina State University	Raleigh, NC	Optical Generation and Manipulation of Spin Qubits
<b>Stemmer, Susanne</b>	University of California, Santa Barbara	Santa Barbara, CA	Intrinsic Topological Superconductors for Next-Generation Quantum Systems
<b>Vuckovic, Jelena</b>	Stanford University	Stanford, CA	Controlled synthesis of solid-state quantum emitter arrays for quantum computing and simulation
<b>Wasielewski, Michael</b>	Northwestern University	Evanston, IL	Systems for Transducing Entanglement between Photons and Electron Spins
<b>Yao, Yongxin</b>	Ames Laboratory	Ames, IA	Quantum Computing Enhanced Gutzwiller Variational Embedding Method for Correlated Multi-Orbital Materials