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

PI	Institution	City, State	Proposal Title
Lawrie, Benjamin	Oak Ridge National Laboratory	Oak Ridge, TN	Nanoscale quantum and classical sensing for superconducting and topological quantum information
Lyon, Stephen	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
Manfra, Michael	Purdue University	West Lafayette, IN	Direct Observation of Fractional Quantum Hall Quasiparticle Braiding Statistics via Interferometry
Martinez, Todd	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
Painter, Oskar	California Institute of Technology	Pasadena, CA	Enhancing Entanglement: Non-Markovian and Floquet Reservoir Engineering in Many-Qubit Superconducting Quantum Circuits
Richerme, Philip	Indiana University	Bloomington, IN	An Ion-Trap Quantum Simulator for Exotic 2D Materials
Schelter, Eric	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
Shultz, David	North Carolina State University	Raleigh, NC	Optical Generation and Manipulation of Spin Qubits
Stemmer, Susanne	University of California, Santa Barbara	Santa Barbara, CA	Intrinsic Topological Superconductors for Next-Generation Quantum Systems
Vuckovic, Jelena	Stanford University	Stanford, CA	Controlled synthesis of solid-state quantum emitter arrays for quantum computing and simulation
Wasielewski, Michael	Northwestern University	Evanston, IL	Systems for Transducing Entanglement between Photons and Electron Spins
Yao, Yongxin	Ames Laboratory	Ames, IA	Quantum Computing Enhanced Gutzwiller Variational Embedding Method for Correlated Multi-Orbital Materials