

# Q-NEWSLETTER

## HIGHLIGHT

### [Quantum Can Now Model Real Material](#)

IBM reported that its quantum computer could simulate an existing material and produce results that matched neutron scattering experiments. The work was done with researchers from Oak Ridge, Purdue, UIUC, Los Alamos, the University of Tennessee, and IBM.

A major promise of quantum computing is simulating quantum materials that are hard for classical computers to model accurately. If today's quantum hardware can already match laboratory data for [a real material](#), that suggests quantum computers may already be starting to become useful as scientific tools, especially for material discovery. IBM explicitly links this to possible long-term applications in superconductors, batteries, medical imaging, energy, and drug development.

The result came from combining current hardware with new algorithms, lower hardware error rates, and quantum-centric supercomputing workflows. In the experiment, the team studied the magnetic crystal  $\text{KCuF}_3$  and compared the quantum simulation directly against neutron scattering measurements. The simulation did not just look plausible but it matched the experiment closely.

## RESEARCH

### [Quantum Battery](#)

Australian researchers built what CSIRO, RMIT, and the University of Melbourne describe as the world's first quantum battery that can

charge, store, and discharge energy. Theory predicts that quantum batteries could have unusual advantages over normal batteries. In particular, these systems can show a counterintuitive effect where they charge faster as they get larger, which is the opposite of ordinary batteries. If that principle can be made practical, it could eventually matter for ultra fast charging and new energy storage technologies.

The prototype consists of a tiny layered organic microcavity device that is charged wirelessly with a laser. The team used spectroscopy to confirm its charging behaviour. The battery charges extremely fast, but only stores energy for a very short period, and does not provide enough useful voltage to power practical devices yet. The researchers believe the next big challenge is increasing the storage time so the technology can move toward commercial relevance.

## MARKET

### [Quantum Error-Correction Alliance](#)

Open Quantum Design (OQD) announced a new collaboration to design and test reliable quantum computers. They will combine OQD's trapped-ion hardware and open platform with QuScript's software and theory, and WD's experience in large-scale reliability and correction systems.

The group wants to demonstrate QEC on OQD's machine and to develop open protocols that other quantum platforms might eventually use.

