

1. Missin

- **As a research hub for photonic quantum technology, particularly photonic quantum sensing**, we collaborate internationally and with other domestic centers.
- Cultivate photonic quantum technology talent from Kyoto and supply them to the quantum technology ecosystem.
- Connect the QIH Network with Kyoto University's diverse (medicine, chemistry, physics, mathematics, agriculture, information science, etc.).

2. Activities

① Photonic Quantum Sensing

Research on novel sensing technologies using “quantum entangled light”

- Research of a “quantum infrared spectroscopy” that measures infrared spectra using visible light sources and detectors.
- Research on quantum entangled-photon sources using nonlinear optical elements that generate broadband entangled light in the visible and infrared regions from laser.
- Research on enhancing the high resolution of “quantum optical coherence tomography” systems, which enable non-invasive using quantum.

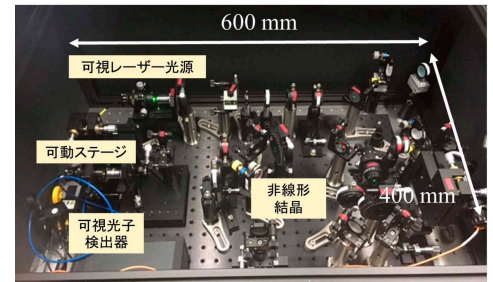


Photo of Quantum FTIR

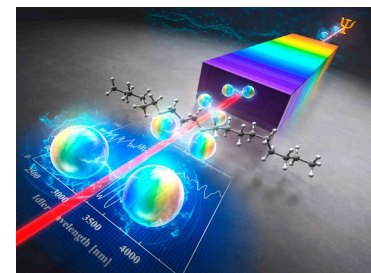
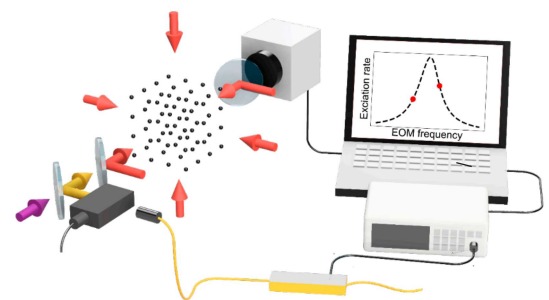


Image of broadband quantum entangled-photon sources

② Cold Atom Quantum Sensor

Research on sensor for New Physics using optically trapped ultracold atoms

- New physics search with optical lattice Hz-precision isotope shift spectrometer.
- Development of test-system for spatial anisotropy using atom tweezer array.

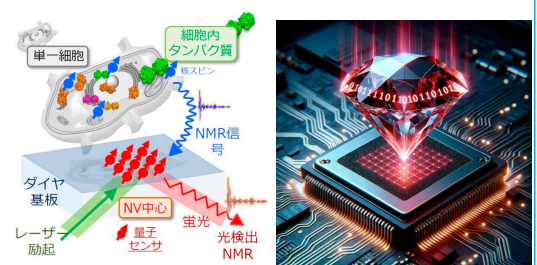


Isotope shift spectrometer

③ Solid-State Quantum Sensors

Research on quantum-sensing technologies using diamond

- Optically detected spin-based microscopy and sensing in diamond. NMR microscopy; dark-matter searches; etc.
- Materials research: Diamond synthesis and Nanodiamond engineering.
- Toward higher sensitivity and practical deployment: Electrical detection ...



Diamond NMR microscope and device Images