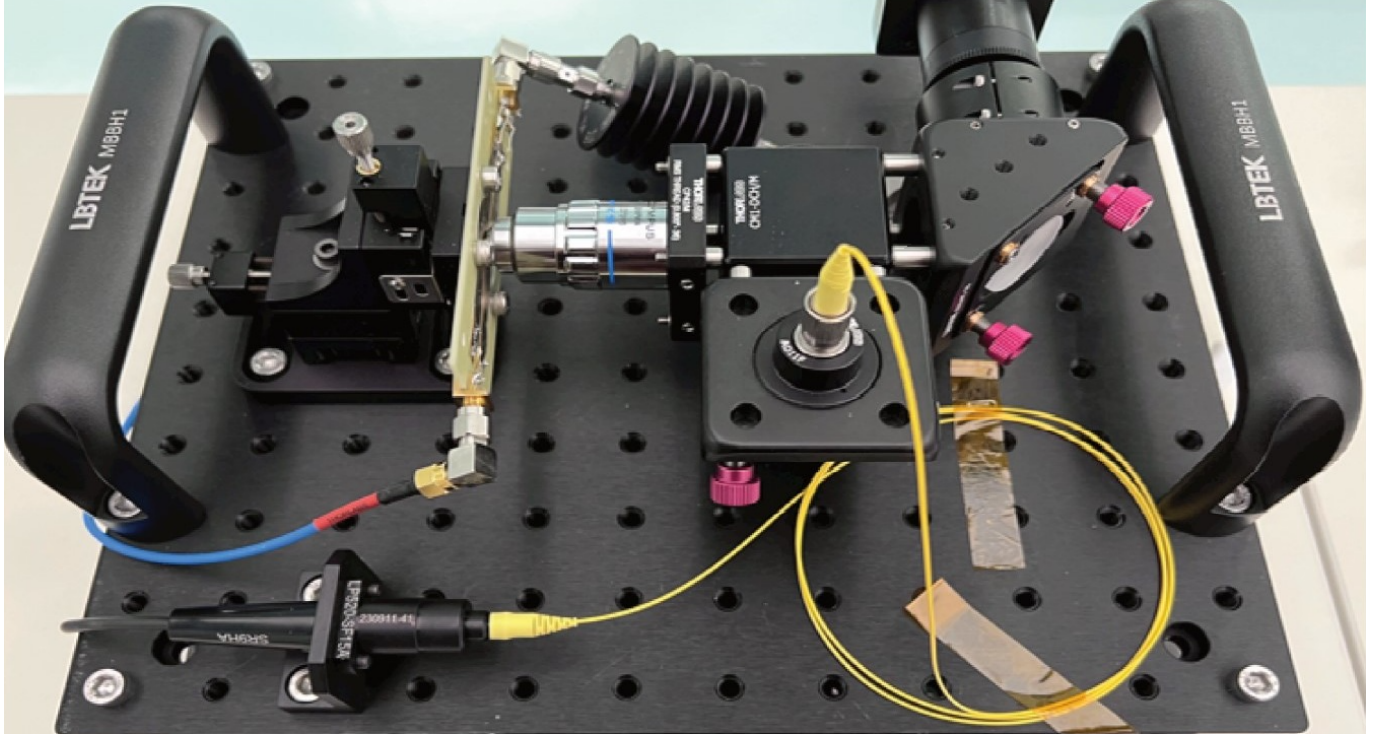


**TECH OFFER**

**Quantum Technology for All: Hands-on Research-Oriented Educational Demonstration Kit**



**KEY INFORMATION**

TECHNOLOGY CATEGORY:

Infocomm - Educational Technology  
Electronics - Lasers, Optics & Photonics

TECHNOLOGY READINESS LEVEL (TRL): **TRL7**

COUNTRY: **HONG KONG**

ID NUMBER: **TO175141**

**OVERVIEW**

In recent years, quantum technology is gaining global traction in our interconnected and digitalised world, promising higher processing capabilities and enhanced cybersecurity among others. Universities are updating their curriculum to equip the next generation of engineers and researchers to harness this potential. However, the complex nature of quantum physics concepts is not easily translatable to traditional "pen and paper" approach and hence poses a significant educational barrier.

The technology owner aims to lower this educational barrier with a customisable, cost-efficient hands-on demonstration tool kit solution for teaching quantum mechanics curriculum via experimental learning. By exposing to practical hands-on experiences, users are able to adequately comprehend these complex concepts, gaining a better understanding and appreciation. By equipping the demonstration kit with sufficient tools, users can engage in self-exploration on various applications of quantum technology.

The technology owner is seeking R&D collaboration partners who wishes to explore applications of quantum technologies or to accelerate education and development of quantum technologies.

## TECHNOLOGY FEATURES & SPECIFICATIONS

The technology solution utilises their novel diamond-based quantum technologies to develop a customisable educational demonstration kit designed to materialise quantum mechanics concepts through diamond-based quantum computing tools. This enables users to do hands-on experimentation and gain practical learning in quantum computing. The kit includes tools in an learning setting like:

- Diamond-based quantum processors
- Quantum measurement devices
- Control systems
- Supporting software for measurement, control and recording of experimentation

Due to the deep technical expertise of the technology owner and customisability of the quantum educational demonstration kit, the technology solution is able to be accommodated for multiple quantum-centric experiment for R&D purposes.

## POTENTIAL APPLICATIONS

**Educational Setting:** Possible integration in any university and technical school quantum mechanics curriculum, enabling hands-on training on quantum computing experience for learning. The tool kit can also enable motivated participants to further experiment, with complimenting simulation software, for virtual quantum computing projects and learning.

**Research and Development (R&D):** Enables exploration of novel quantum computing concepts and facilitation of advanced experimentation and data analysis in quantum information science.

**Training in Quantum Technology Field:** Enhancement of training programs (like workshops and seminars) for professionals within the quantum technology space, increasing competency in the subject matter.

**Quantum Sensing Applications:** The integration of the diamond-based quantum technologies enables existing applications for characterisation, measurements and sensing to have higher precision, better accuracy and enhanced sensitivity.

## UNIQUE VALUE PROPOSITION

This fully functional, hands-on quantum technology toolkit addresses a gap in the STEM education curriculum by providing a portable and customisable solution. It makes basic quantum technology, typically confined to laboratories, accessible to a broader audience in a cost-efficient technology solution. Designed by researchers with a deep understanding of quantum physics education, the toolkit simplifies complex concepts for non-specialists, bridging educational gaps effectively.