INVESTOR EXECUTIVE SUMMARY
Atomic Magnetometer for Diagnosing Heart and Brain Diseases

Summary

Chiang Mai University's Research Center for Quantum Technology (RCQT) is collaborating with Rebus Co., Ltd. in creating quantum atomic magnetometer to detect low-level biomagnetic signals for diagnosing heart and brain diseases. This magnetic sensor provides capabilities and potentialities superior to conventional ones based on superconducting technology, e.g., cryogen-free, highly sensitive, non-contact, non-invasive, miniature etc. At the current stage, there is no biomagnetic diagnosis facility of any kind available in Thailand. We are working on design and construction of an atomic magnetometer for the experimental proof of magnetic detection. We are raising THB 50 million to commercialize this technology within twelve months. Visionary investors who want to innovate novel techniques to diagnose heart and brain diseases are welcome.

Background

Diagnoses of heart and brain diseases by measuring biomagnetic signals (i.e., MCG and MEG, respectively) needs a highly sensitive magnetometer. A high-cost SQUID sensor is currently the only solution, but it requires bulky cryogenic freezing making the whole system immobilized. In Thailand, there is no available facility on biomagnetic diagnosis.

Our Tech Solution

Measuring weak magnetic field using atoms provides ultra-high sensitivity unmatched by any other technique. Our developing atomic magnetometer aims to obtain sensitivity better than SQUID sensors with cost efficiency, portability, ease of use, and multichannel function. The total cost is less than 5% of the price of a 5 Tesla MRI.

How It Works

Vapor rubidium atoms in a glass cell are excited into dark states with optical pumping by a circularly polarized laser beam; the atomic spins are polarized. Under an external magnetic field, the direction of locked-up atomic magnetic moment is changed and gets measured by another polarized laser beam.

The Plan

We are working on design and construction of important components of atomic magnetometer, which are rubidium heating process and active magnetic shielding system. The optical detection and signal processing are ready for experimental proof of magnetic detection. Once we have received the investment fund, we will accelerate our R&D process to complete the design of our commercial prototype within twelve months.

The Ask

We are looking for investors who would like to participate in our THB 50 million investment round, with minimum investment of THB 5 million for each investor. All R&D contracts will be made between individual corporate bodies and Chiang Mai University.

Contact

Please contact Waranont Anukool, Ph.D., Coordinator, Research Center for Quantum Technology (RCQT), Chiang Mai University, +66 89-191-2122, waranont.a@cmu.ac.th.