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Singapore: NUS–NTU Collaboration Driving Next-Gen Research

The National University of Singapore (NUS) and Nanyang Technological University, Singapore (NTU Singapore) are deepening their strategic collaboration by renewing their commitment to share some of the world's most advanced research facilities. This initiative is set to accelerate technological innovation, strengthen Singapore's digital capabilities and drive impactful scientific breakthroughs with global relevance.

By granting scientists from both institutions access to multi-million-dollar, state-of-the-art equipment, the two universities are creating a powerful platform for innovation. This pooling of infrastructure and expertise will encourage joint research projects, spur co-authored publications and enhance funding opportunities. It also positions Singapore as a hub where top-tier research facilities directly support the creation of next-generation technologies and solutions.

Such access ensures that local researchers can match or surpass the capabilities of leading global laboratories, enabling Singapore to remain highly competitive in the rapidly evolving fields of science and engineering.

Among the shared resources is the Invizo 6000 3D Atom Probe microscope at NUS, one of only seven worldwide and the first in ASEAN. It offers 3D imaging and chemical analysis at the atomic level, enabling atom probe tomography to study how elements are distributed in semiconductor devices, the structure of advanced alloys and the behaviour of atoms in energy materials for batteries and fuel cells. Its unparalleled precision makes it a crucial tool for developing breakthrough technologies in electronics, clean energy and advanced manufacturing.

At NTU, NUS researchers can access an aberration-corrected transmission electron microscope equipped with energy dispersive X-ray spectroscopy, electron energy loss spectroscopy and holography capabilities. This ultra-powerful microscope can visualise single columns of atoms in high resolution, determine the elemental composition of materials, analyse the properties of atomic bonds and map invisible electric and magnetic fields.

Such insights are instrumental in designing more efficient quantum computers, creating nanoparticles for advanced medical diagnostics and drug delivery and engineering novel materials for construction and industrial applications.

These capabilities also open doors for breakthroughs in AI-driven material discovery, where machine learning algorithms analyse vast datasets from these microscopes to identify promising compounds and structures far faster than traditional methods.

NUS President Professor Tan Eng Chye hailed the partnership as “a force multiplier in amplifying our research capabilities and accelerating discoveries with greater scale and impact”.

He emphasised that by combining complementary strengths in talent, infrastructure and innovation, the two institutions are better equipped to deliver solutions to complex global challenges.

NTU President Professor Ho Teck Hua echoed this view, noting that while the universities compete globally, partnerships like these enhance Singapore’s position on the world stage. He added that sharing high-end equipment maximises efficiencies, fosters deeper collaborations and enables mutual learning across disciplines.

The renewed agreement builds on ongoing collaborations, including leadership of the Sustainable Tropical Data Centre Testbed, the world’s first facility in the tropics dedicated to developing energy-efficient cooling systems for data centres. This project directly supports the global shift towards greener, more sustainable digital infrastructure.

In addition, NUS and NTU, together with global investment firm Temasek, have launched a joint pilot programme to accelerate the growth of deep-tech start-ups emerging from university research.

By aligning cutting-edge research with commercialisation pathways, this initiative strengthens Singapore’s position as a leader in translating high-value research into real-world impact.

Such start-ups have the potential to pioneer disruptive technologies in sectors ranging from renewable energy and biotechnology to cybersecurity and precision manufacturing, reinforcing Singapore's long-term innovation strategy.

Through a commitment to collaborative excellence, NUS and NTU are not only advancing Singapore's research capabilities but also reinforcing the nation's reputation as a forward-looking leader in technology and innovation. These efforts ensure that scientific discoveries are rapidly transformed into solutions that benefit industry, society and the global community.

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