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**NMB's Climate Resilient Smart Agriculture and Green Hydrogen Innovations
Received Recognition at ITEX 2026**

Kuala Lumpur, 21 May 2026 – NMB (NanoMalaysia Berhad), a company limited by guarantee under the Ministry of Science, Technology and Innovation (MOSTI), and its industry partners showcased two locally developed innovations at the 37th International Invention, Innovation and Technology Exhibition (ITEX) 2026, under the Invention and Design competition category. The projects highlight NMB's continued efforts to advance market-driven, climate-friendly nanotechnology solutions for the smart agriculture and clean energy sectors towards sustainable economic development. These two technological solutions were recognised at ITEX 2026, with SmartLeaf receiving a Gold Award and the Tandem Indoor Solar Cell with Photoelectrochemical Cell for Hydrogen Production receiving a Silver Award.

The SmartLeaf: Leaf-Mimicking Crops Sensors for Smart and Precision Agriculture is a next-generation graphene-based leaf-wetness sensor developed by NMB in collaboration with Regaltech (M) Sdn Bhd and Xiamen University Malaysia. Designed for climate-resilient precision and smart agriculture, SmartLeaf addresses key farming challenges including water inefficiency, fertiliser overuse and crop disease risks. Using Laser-Induced Graphene (LIG) on a PDMS-coated biomimetic surface, the sensor detects moisture via capacitance changes and transmits real-time Internet of Things (IoT) data to support smarter irrigation and crop management.

SmartLeaf is low-cost, scalable and energy-efficient, making it suitable for applications such as horticulture, plant disease management, greenhouse automation, smart farming technologies, research and development, and urban green infrastructure. The technology is fully developed at Technology Readiness Level (TRL) 7 and ready for commercialisation, with potential benefits including yield improvement of 10% to 25%, input cost reduction of up to 15%, and water savings of up to 30% while maintaining yield quality.

Also showcased was the Tandem Indoor Solar Cell with Photoelectrochemical Cell for Hydrogen Production, developed by NMB with PhlexCell Sdn Bhd and Universiti Teknologi PETRONAS, a compact green hydrogen generation module that integrates indoor solar light harvesting with photoelectrochemical water splitting. The system uses a novel photocatalyst to absorb light and support hydrogen production under both sunlight and low-light indoor conditions. The prototype is currently at TRL 4-5, with lab-scale validation demonstrating promising hydrogen-generation performance and operational stability.

The hydrogen production module demonstrates potential for future applications in portable clean energy systems, off-grid hydrogen generation, indoor low-light energy harvesting, energy storage, and research or educational demonstration kits. Its key advantages include self-powered operation, continuous hydrogen generation



capability, high photocatalyst stability for long-term use, and a compact, scalable system design.

NMB Group Chief Executive Officer, Prof. (Adj.) Dr Rezal Khairi Ahmad said, “NMB’s annual participation in ITEX 2026 is a method to secure third party validation of the demand-driven technologies developed collaboratively with our industry and university partners. Our Venture Builder investment model actualizes our commitment to translate nanotechnology-based innovations into practical solutions that address real-world challenges. Both locally developed SmartLeaf and hydrogen production module powered by ambient light are designed for food security via sustainable agriculture and accessible clean energy aspirations thus supporting Malaysia’s transition towards a technology-driven climate resilient economy.”

The participation underscores NMB’s role in strengthening Malaysia’s green innovation ecosystem through strategic collaboration with industry and academia, while supporting national priorities in advanced materials, sustainable agriculture, renewable energy and low-carbon technology development.

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