



Lakshmi Mohanbabu

JOINT NEWS RELEASE

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Singapore and Japan unveil world's deepest ocean art installation

Deployed 7km below the sea, the artwork is by Singaporean artist Lakshmi Mohanbabu, tech firm NuStar and NTU Singapore

Singapore is now the first country to have an art installation 7,000 metres beneath the ocean.

It comprises three metal cubes designed by Singaporean artist **Ms Lakshmi Mohanbabu**, the first Singaporean to send her artwork into space on the International Space Station in 2022.

A tribute to all those impacted by natural disasters, these artworks were installed near the Mariana Trench off the coast of Japan by **NuStar Technologies** in December last year.

They were deployed as part of a specially designed early warning seismic sensor for undersea earthquakes, in collaboration with **Japan's Agency for Marine-Earth Science and Technology (JAMSTEC)**.

One of the cubes was made using a new hybrid manufacturing process developed by **Nanyang Technological University, Singapore (NTU Singapore)**.

The historic milestone in conjunction with Singapore's **SG60** celebrations was observed at Gallery ART NOW, attended by Guest-of-Honour, **NTU Board Chair Ms Goh Swee Chen**, who is also Chairman of the National Arts Council.

Each hollow cube is crafted from corrosion-resistant stainless steel, and they measure 10 cm on each side. There are five sides for each cube, showcasing the iconic "Universal Language of Symbols" by Ms Mohanbabu.

The five designs for each of the five exposed sides - Nautilus, Primary, Secondary, Windmill and Dromenon - were created to resonate with communities worldwide, fostering a deeper, universal connection by embodying nine existential elements

common to all humanity - Creation, Lifecycles, Colour, Shape, Movement, Direction, Energy, Space and Time.

Each cube is featuring a different design at the top. For instance, NTU's 3D printed cube has Dromenon facing outwards, while the other two cubes featured Primary and Nautilus.

Artist, architect and leader of the project, Ms Lakshmi Mohanbabu explained, "Art has the unique ability to connect humanity across physical and metaphorical depths. With the Deep Ocean Interactions Project, we aim to inspire meaningful change highlighting our interconnected existence by bringing people together through a shared journey and purpose.

"The earlier interactions cubes that had orbited around Earth in space will also be sent to the moon as part of a permanent art installation. With these two art installations, Singapore is the first nation to have artworks on the moon and the deep ocean. This milestone is also a testament to Singapore's pioneering spirit and tenacity as we celebrate SG60 this year."

Engineering feat by NuStar and JAMSTEC

The successful deployment of the art installation was made possible through a partnership between NuStar Technologies and JAMSTEC as part of the Long-Term Borehole Monitoring System (LTBMS).

The LTBMS was originally developed to monitor seismic activity near tectonic plate boundaries and supports real-time data monitoring for earthquake and tsunami early warning systems.

To accommodate the artwork, specially designed cavities and holders were incorporated into the LTBMS equipment bay frame. A specialised ultra-deep-sea camera system was remotely deployed from the surface to the ocean depths to monitor the LTBMS installation and capture video and photos of the cubes at the record-breaking water depth.

JAMSTEC and NuStar subsequently deployed the equipment to the ocean floor and successfully integrated it into the Dense Ocean Network System for Earthquakes and Tsunamis (DONET) on 12 December 2024.

Mr Goi Kim Kok, Managing Director of NuStar, described the project as an example of the fusion of technological innovation, art, and scientific monitoring: "Together with Lakshmi and our partners at JAMSTEC, we have demonstrated that the deep ocean

can be a platform for both scientific discovery and cultural expression. It is also timely that next year will mark the 60th anniversary of Singapore-Japan diplomatic relations.”

Breakthrough in additive manufacturing

One of the three cubes is not made from ordinary steel but manufactured using 80 layers of ultra-thin stainless-steel sheets fused into a 4mm thick wall.

This hybrid 3D printing technology was invented by **Assistant Professor Lai Changquan** and his team at **NTU’s Singapore Centre for 3D Printing (SC3DP)**, who worked closely with Lakshmi Mohanbabu on several prototypes before printing the final product.

Known as LAPIS (Laser Patterning and Incorporation of Sheets), it combines 3D printing with laser cutting to produce highly intricate, fully dense structures that are over 70 per cent stronger than bulk steel and resilient to the extreme pressure and corrosive conditions of the deep ocean.

The technique also delivers a surface finish three times superior to conventional methods, reducing the need for additional refinement.

Asst Prof Lai said, “This project demonstrates the potential of interdisciplinary research to push the boundaries of what is possible. Creating a piece of art capable of withstanding the immense pressures of the deep ocean is a testament to the versatility and durability of our technology.”

Following the success of this project, Asst Prof Lai recently co-founded a start-up with his students with the support of the **NTU Innovation and Entrepreneurship** initiative. The team plans to expand the potential applications of their unique technology in industries such as aerospace, maritime, and energy.

This marks Lakshmi’s third collaboration with NTU SC3DP on her artworks. The first two collaborations involved miniature Interactions artworks, one where NTU helped with prototyping, while the other was 3D-printed using a unique process as the final artwork.

Lakshmi had two cubes sent to space aboard the International Space Station as part of the Moon Gallery project in 2022, with plans for placement on the Moon in 2025.

A symbol of unity and innovation

The installation of the Deep Ocean Floor Art Gallery is not only a technological and artistic feat but also a profound statement about the power of collaboration, said Ms.

Mohanbabu. She hopes the project will inspire fellow Singaporeans to aim for the stars and the deepest oceans, demonstrating that nothing is impossible when we put our minds to it.

This project brings together experts from diverse fields, showcasing how art, science, and engineering can work in harmony to achieve extraordinary outcomes.

The three uniquely designed cubes - **Red and White, Ocean Blue and Orange, and Purple and Aquamarine Blue** - reflect the mysteries of the deep, life's cyclical nature, change and transformation. The vibrant colours signify Earth's changing hues, the Ocean's enigmatic depths, and the boundless expanse of space.

The **Red and White Cube** carries a special resonance celebrating the collaboration between Japan and Singapore. Its design draws from the shared colours and symbolism of their flags evoking the sun, stars and the moon. Together, these creations bridge the realms of art, science, and nature, connecting the cosmos to the deep sea.

With its seamless blend of artistic vision, engineering ingenuity, and scientific purpose, the Deep Ocean Interactions Project reinforces Singapore's reputation as a hub for creativity and innovation.

It aims to inspire future endeavours and interdisciplinary collaborations at the intersection of art and technology, driving meaningful collaborations that push boundaries and spark new possibilities.

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About Lakshmi Mohanbabu

An artist, architect, and designer, Lakshmi Mohanbabu's work seamlessly integrates art, science, and technology to create meaningful, multidisciplinary projects that foster connections across cultures, bridging people across space, time, and borders.

Rooted in her architectural background and early life in Soviet-occupied Afghanistan, her projects address societal issues, spark conversation, and inspire change. Through her *Interactions* series, she explores themes of unity, resilience, and collaboration.

Her creations embody a timeless vision that have led to exhibitions in space and the deep ocean and will establish a presence on the Moon in 2025 as part of the Moon Gallery, expanding the boundaries of art to inspire global dialogue.

For more information, visit:

<https://www.lakshimohanbabu.com>

<https://www.lakshimohanbabu.com/press.html>

About NuStar

NuStar Technologies Pte Ltd is a Singapore-based provider of innovative solutions for the energy, mining, and offshore scientific research industries. The company's team comprises experienced and well-trained professionals with extensive expertise in oil and gas equipment and services. With in-depth industry knowledge, NuStar specializes in the design, manufacturing, and installation of subsea and surface production and processing equipment, ensuring compliance with industry requirements and standards.

Since its inception, NuStar has successfully delivered numerous projects across the Asia-Pacific region, supporting subsea and surface drilling and exploration for various companies. The company's capabilities include the design, manufacturing, and qualification of new equipment, as well as the repair, refurbishment, and restoration of equipment for field deployment.

NuStar's team of experienced service engineers provides on-site support during drilling operations, including installation, repair, and maintenance of both NuStar-manufactured and third-party subsea and surface equipment. Major repairs are conducted at NuStar's in-house facility, which is fully equipped to handle the refurbishment of equipment from various manufacturers.

Committed to innovation and engineering excellence, NuStar Technologies continues to embrace challenges and deliver cutting-edge solutions to meet the evolving needs of its clients.

For more information, visit: www.nustar-tech.com.

About Nanyang Technological University, Singapore

A research-intensive public university, Nanyang Technological University, Singapore (NTU Singapore) has 35,000 undergraduate and postgraduate students in the Business, Computing & Data Science, Engineering, Humanities, Arts, & Social Sciences, Medicine, Science, and Graduate colleges.

NTU is also home to world-renowned autonomous institutes – the National Institute of Education, S Rajaratnam School of International Studies and Singapore Centre for Environmental Life Sciences Engineering – and various leading research centres such as the Earth Observatory of Singapore, Nanyang Environment & Water Research Institute and Energy Research Institute @ NTU (ERI@N).

Under the NTU Smart Campus vision, the University harnesses the power of digital technology and tech-enabled solutions to support better learning and living experiences, the discovery of new knowledge, and the sustainability of resources. Ranked amongst the world's top universities, the University's main campus is also frequently listed among the world's most beautiful. Known for its sustainability, NTU has achieved 100% Green Mark Platinum certification for all its eligible building projects. Apart from its main campus, NTU also has a medical campus in Novena, Singapore's healthcare district.

For more information, visit www.ntu.edu.sg