

# PRESS RELEASE

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FOR IMMEDIATE REPORTING

## NRF SETS UP NATIONAL MEMBRANE CONSORTIUM TO CATALYSE TECHNOLOGY ADOPTION BY COMPANIES

1 The National Research Foundation Singapore (NRF) will set up a national consortium on membrane science and technology to promote research, collaboration, and commercialisation in innovative membrane products and technologies. The Singapore National Membrane Consortium (SG-MEM) will connect expertise in our research institutes with companies, to translate cutting-edge research in membrane technologies into products and technologies that meet industry needs. It will provide a seamless platform for researchers, industry and government agencies to promote and access membrane technology for new focus areas beyond water, such as in energy, pharmaceuticals, food and beverage, and biomedical applications.

2 SG-MEM will bring together the multi-faceted membrane R&D capabilities of Singapore's public-sector universities and innovation centres under one umbrella to accelerate the translation of technologies for industry applications. It will integrate the R&D capabilities of the **Separation Technologies Applied Research and Translation (START) Centre**, under Nanyang Technological University, Singapore's (NTU Singapore) innovation and enterprise arm NTUitive; the National University of Singapore's **Membrane Science and Technology Consortium (MSTC)**; NTU Singapore's **Singapore Membrane Technology Centre (SMTC)**, which is part of the Nanyang Environment and Water Research Institute (NEWRI); and Ngee Ann Polytechnic's **Environmental and Water Technology Centre of Innovation (EWTCOI)**<sup>1</sup>.

3 SG-MEM will work closely with Singapore-anchored industries across the entire value chain, including start-ups, small and medium-sized enterprises (SMEs), large local enterprises (LLEs), multi-national companies (MNCs), as well as key Singapore government agencies, including SPRING Singapore, the Economic Development Board (EDB), the Energy Market Authority (EMA), Singapore's national water agency PUB, and the National Environment Agency (NEA).

4 To date, a total of 15 SMEs, LLEs and MNCs have joined the consortium as founding members. These are Shell, Sembcorp, Grundfos, Kurita-Singapore, Aquaporin-Asia, Ceraflo, De.mem, Blue Ocean Memtech, Marmon Product Development Center, Evoqua Water Technologies, SUEZ, Regentech, ECOSOFTT, UES Holdings, and Trittech Group Ltd.

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<sup>1</sup> Under SG-MEM, MSTC and SMTC will focus on basic and applied research, while START and EWTCOI will support translational research.

5 Dr Adrian Yeo, Vice President, Innovation (Water), Renewables and Environment Business, Sembcorp Industries, said: “Sembcorp is honoured to be one of the founding members of SG-MEM. We are always looking to keep abreast of technological advances in our sector, and this includes the latest in membrane technology. We believe that our collaboration with SG-MEM will allow Sembcorp to tap into new insights which could potentially be applied in the continual development of our water business.”

6 Mr Andreas Kroell, Chief Executive Officer and Director, De.mem, said: “SG-MEM brings together two sides of the medal in the membrane industry value chain: industry and research. Singapore is world-leading in both. From De.mem’s perspective, the ability to follow research, technology and innovation trends through this platform, combined with the strong support and drive of the Singapore government towards commercialisation, is a great asset. This is particularly important for a company like ours, which is growing quickly but still limited in terms of resources and manpower compared to larger MNCs.”

7 Mr George Loh, Director (Programmes) at NRF, said: “Singapore has built a strong reputation as a leader in membrane technologies for water treatment. Our universities, NUS and NTU, are ranked top in membrane research, and they have developed advanced membrane technologies for water companies. The SG-MEM Consortium provides the platform for SMEs, which are not in the water sector, to have access to membrane technologies for applications in diverse sectors including food and beverages, fragrance, and medtech. This will help our SMEs benefit from the latest technologies to grow their business.”

### **Closer Collaboration between R&D Community and Industry**

8 Singapore has established itself as a global water hub with significant capabilities in water purification techniques using membrane technologies. There are also strong membrane expertise in the fields of gas separation, energy applications, biomedical and biopharmaceutical technologies in our institutes of higher learning.

9 To strengthen integration between researchers and industry, companies working with SG-MEM will benefit from working with researchers in one or more of the following areas that suit their business interests:

- a) Development of novel membrane materials based on market needs, and the processes for their fabrication;
- b) Design, assembly and testing of modules or elements; and
- c) Membrane systems including processes, operation, integration and optimisation.

10 SG-MEM will focus on five sectors that present opportunities for the commercialisation of membrane technology:

- a) Gas separation and purification in the energy sector;
- b) Concentration and purification of pharmaceutical ingredients in the pharmaceuticals sector;
- c) Clarifying, concentration and purification of products in the food and beverage sector;
- d) Controlled drug-delivery systems in the biomedical sector; and
- e) Energy-efficient treatment processes in the water sector.

11 Companies will have access to world class research laboratories and facilities located at the research institutes to manufacture, assemble and test membranes to bring R&D to market. SG-MEM activities will include technology workshops to facilitate interactions between research institutes and industry representatives on the latest technologies. SG-MEM will also collaborate with the Membrane Society in Singapore for wider outreach to the professional membrane community, as well as network with other regional and global membrane centres.

12 SG-MEM will be governed by a Steering Committee and a Technical Management Committee. The Steering Committee will take charge of the overall direction, strategy and work plan of the consortium, and will be chaired by Dr Adil Dhalla, Managing Director of START. The Technical Management Committee will look into the technical aspects and performance of the consortium, and will be chaired by Professor Gary Amy, Coordinator of the MSTC.

13 Dr Adil Dhalla and Professor Gary Amy see SG-MEM as a vehicle to build on Singapore's proven success as a "Hydrohub" and also establish Singapore as a globally recognised "Membrane Hub", providing global leadership across the diverse fields of application mentioned earlier. "SG-MEM will provide our industrial partners an end-to-end offering of all aspects of membrane technology, from discovery of new materials, scale-up and translation, to piloting and commercialisation. It will also be a forum for industry players involved in both upstream and downstream businesses involving membranes, to network and explore collaborative projects," they said.

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