

## NTU Singapore and MPI for Colloids and Interfaces Open "Artificial Senses" Laboratory

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*The "Joint Lab" is a joint institution of the Nanyang Technological University, Singapore (NTU Singapore) and the Max Planck Institute for Colloids and Interfaces (MPIKG) in Potsdam. Innovative research activities in the field of artificial sensors will be bundled here and will be used, for example, in robotics and modern healthcare.*

For example, scientists are researching skin-like, soft structures that measure health and environmental conditions through intelligent sensors and equip machines with "artificial senses".

Modern materials, "skin electronics", biomedical engineering and artificial intelligence (AI) can thus be integrated into a sensory feedback system. Another vision of the research network is to expand the human senses.

Novel sensor technologies can make it possible to see or hear radar frequencies or microwaves, to smell infections or genetic patterns, or to feel earthquakes.

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Security forces could locate toxic substances that leak in a factory, and geologists identify the tiniest tectonic movements, warning of earthquakes earlier.

NTU President Professor Subra Suresh said, "This collaboration will take robotics and medical technologies to a new level by combining human senses, artificial intelligence, and machine learning.

This will benefit a wide variety of industries, but especially healthcare. State-of-the-art medical devices could help reduce misdiagnosis, and precision medicine could offer faster and better care for patients.

The close collaboration with leading international partners reflects NTU's continued quest for excellence in research and will bring solutions that benefit humanity. "

Located at the NTU, the Joint Lab is also the first project for the MPIKG in Southeast Asia.

Professor Peter Fratzl, Chairman of the Chemical-Physical-Technical Section of the Max Planck Society, emphasizes: "A multi-sensor system with inexpensive, yet robust sensors, coupled with decentralized neuronal condensed data, will produce instruments that are able to act like an intelligent species.

This allows "big data" to be transformed into unique meta-information such as warning signals or sensations. The applications for engineering, environmental technologies or medical treatments are incredibly broad. "

The joint lab will employ a total of up to 30 NTU and MPIKG scientists. Already, some sensors have been presented that directly record external stimuli such as touch, noise, pressure, light and temperature.

For example, a health monitoring tool that has such sensory functions and artificial intelligence might be able to alert physicians and family members as soon as patients or elderly people become critically ill.

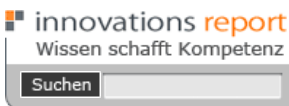
Professor Louis Phee, dean of the NTU College of Engineering, states, "When we use technologies such as artificial intelligence, we are able to develop systems that can better see, hear, smell, feel, and taste than we can. Allowing Nature to Successfully Integrate These Systems Into Our Everyday Life We could even sharpen our human senses and thus perceive our environment more expansively. "

The Joint Lab will be equipped with state-of-the-art material processing techniques, high-quality signal analyzers, and algorithm-based experimental setups for human



The NTU Singapore and the MPI for Colloids and Interfaces have started a joint laboratory that conducts research on "artificial senses" for robotics and healthcare.

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machine interfaces and machine learning.

But it should also be a platform and starting point for scientists, engineers and students to transfer their own ideas from the laboratory into functioning prototypes and thus into economic use.

Nanyang Technological University, Singapore

A total of 33,000 undergraduate and graduate students are studying engineering, economics, science, humanities, arts and social sciences, and graduate programs at Nanyang Technological University, Singapore (NTU Singapore). In addition, there is a medical college, the Lee Kong Chian School of Medicine, which was founded together with Imperial College London.

NTU is also home to independent world-class institutes. These include the National Institute of Education, the S Rajaratnam School of International Studies, the Earth Observatory of Singapore and the Singapore Center for Environmental Life Sciences Engineering and various leading research centers such as the Nanyang Environment and Water Research Institute (NEWRI) and the Energy Research Institute @ NTU (ERI @ N).

Ranked 12th in the world, NTU has established one of the best young universities in the world in the last five years. The university's main campus is regularly listed as one of the 15 most beautiful hotels in the world and has 57 building complexes certified by the Green Mark (equivalent to the LEED international seal of approval), comprising more than 230 buildings. 95% of the buildings have the green mark in platinum. The NTU also maintains a campus in Singapore's health district.

For more information visit [www.ntu.edu.sg](http://www.ntu.edu.sg).

Max Planck Institute of Colloids and Interfaces (MPIKG)

The MPIKG was founded in 1992 as one of the first Max Planck Institutes in the new federal states. Within just 25 years, the institute has become one of the world's leading research institutions in the field of nanomaterials and soft matter.

In total there are four departments with about 40 working group leaders.

Die Mission des Instituts besteht darin, mit wissenschaftlicher Exzellenz und Interdisziplinarität eine Brücke von Molekülen oder hybriden Materialien zu Biosystemen zu schlagen und dabei den wissenschaftlichen Nachwuchs bestmöglich zu fördern. Tatsächlich sind inzwischen mehr als 150 ehemalige Mitarbeiter/innen auf Professuren an in- und ausländische Universitäten berufen worden. Nach Einschätzung der Alexander von Humboldt-Stiftung ist das MPIKG in Deutschland eine der Spitzenadressen für ausländische Nachwuchswissenschaftler und Humboldt-Preisträger (Platz 2 unter den außeruniversitären Forschungseinrichtungen bundesweit).

Weitere Informationen erhalten Sie unter [www.mpikg.mpg.de](http://www.mpikg.mpg.de)

Weitere Informationen:


<https://www.youtube.com/watch?v=tY2rClarwBA>


Katja Schulze | Max-Planck-Institut für Kolloid- und Grenzflächenforschung

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