

# **AVVISO DI SEMINARIO**

Il giorno **22 giugno 2026** alle ore **12:00**

in aula **GISMONDI**

**Il Prof. Tsuyoshi MINAMI,**

Institute of Industrial Science, The University of Tokyo

terrà un seminario dal titolo

## **Self-assembled Chemosensor Arrays**

Proponente: Prof.ssa Larisa Lvova

## Self-assembled Chemosensor Arrays

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### Abstract

The cross-reactive receptors of the mammalian olfactory systems allow the detection of multiple odorant molecules simultaneously. The obtained recognition information is data-processed, resulting in the discrimination of odor based on pattern recognition. Such sophisticated recognition fashions in *Mother Nature* are promising designs for powerful pattern recognition-driven chemical sensing. Real samples such as body fluids, foods and drinks, and environmental water contain various invisible analytes with different structural geometries, sizes, and charges. Therefore, efficient receptor designs are required, considering the above features of analytes in real-sample analysis. Biogenic receptors, including enzymes and antibodies, are the representative materials that allow selective recognition against specific analytes, based on the lock-and-key models. Meanwhile, synthetic receptors are designed by molecular recognition chemistry, which offers superior cross-reactivity to selective recognition.

Chemosensors comprising synthetic receptors and indicators enable visualization of analyte recognition information through changes in colorimetric and/or fluorescent properties. Chemosensors on an array show various optical properties depending on the types of analytes and their concentrations, which are referred to as fingerprint-like responses. With pattern recognition techniques, optical chemical information can be visualized qualitatively and quantitatively. In this regard, molecular self-assemblies serve as driving forces for obtaining various optical patterns derived from assembly and disassembly in chemical sensing. To date, the author has developed self-assembled chemosensors for pattern recognition and revealed the applicability of this concept to various chemical sensing in water environments. The strategies for chemosensor designs based on molecular self-assembly for multi-component analysis will be introduced in the presentation.



### Biography

Tsuyoshi Minami received his Ph.D. from Tokyo Metropolitan University in 2011. During his doctoral studies, he conducted collaborative research at the University of Bath, UK. From 2011 to 2013, he worked as a Postdoctoral Research Associate at Bowling Green State University, where he was subsequently appointed as a Research Assistant Professor in 2013. In 2014, he joined Yamagata University as an Assistant Professor. He moved to the University of Tokyo in 2016 as a Lecturer and has served as an Associate Professor since 2019. In 2025, he was elected a Fellow of the Royal Society of Chemistry (FRSC). His research interests encompass supramolecular analytical chemistry, self-assembled materials, nanoparticles, and organic transistors for bio/chemical sensing applications.