Q-AOS 九州大学 アジア・オセアニア研究教育機構 ブラウンバッグセミナー

Brown Bag Seminar No.259

2026 12.16 (wed.) 12:10 ~ 12:50

12:10-12:15 ◆ Introduction
12:15-12:40 ◆ Seminar (Presentation)
12:40-12:50 ◆ Q&A

Online (Zoom)
Scan here for Registration

https://us02web.zoom.us/webinar/register/WN_XqN32zyET8-PsnFxw2vIFw

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Molecular Robotics:

Toward Building Robots Designed at the Molecular level



3 GOOD HEALTH AND WELL-BEING
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
14 海の豊かさを守ろう

Key Words

Molecular Robotics
DNA Nanotechnology
Artificial Cells
Hydrogels

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I am originally from Iwate Prefecture, Japan. I graduated from the Department of Mechanical and Aerospace Engineering at Tohoku University in 2013 and received my Ph.D. in Engineering from the Department of Bioengineering and Robotics at the same university in 2018. I subsequently worked as a Research Fellow (SPD) of the Japan Society for the Promotion of Science (JSPS) at Tokyo Institute of Technology. In 2019, I was a Visiting Scholar at Kent State University in the United States.

In 2020, I joined the Frontier Research Institute for Interdisciplinary Sciences at Tohoku University as an Assistant Professor. Since 2022, I have been an Associate Professor at Kyushu Institute of Technology, where I lead my own research group.

My research focuses on molecular robotics and DNA nanotechnology. Since 2024, I have been conducting research under the JST FOREST program (Fusion Oriented REsearch for disruptive Science and Technology). In 2026, I became President of the Molecular Robotics Research Society, affiliated with the Chem-Bio Informatics Society (CBI), and received the CHEMINAS Young Innovator Award. I am also a contributing author of "Molecular Robotics: An Introduction" (Springer, 2022).

Living organisms achieve a wide range of functions, such as movement, sensing, and communication, by combining various biomolecules, including DNA and proteins. Could we also design and assemble molecular components to create robots with sophisticated functions? Inspired by this idea, we are pursuing "molecular robotics," an approach to designing and building robots from molecular building blocks. In this talk, I will introduce examples from our research and discuss the current state and future prospects of molecular robotics.

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