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## ORGANIC AND INORGANIC CHEMISTRY

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**Design and creation of autonomous dynamics in self-assemblies****Yoshiyuki Kageyama**

Hokkaido University, Japan

**M**y research field in organic chemistry that creates collective and hierarchical movements of molecules in synthetic chemistry. The ultimate goal is to create a reaction system that imitates the living body, that is, create artificial life. The specialty of the chemical process of living organisms lies in where individual reactions progress in a specific and efficient manner and reactions are synchronized to realize continuous molecular group behavior. The spatiotemporal behavior of this biological system is dissipative self-organization, which is far apart from the properties of common substances that apparently stop reactions and exercise at steady state. From the view point of mimetics of the characteristics of such life, synthetic chemical research to create molecular assemblies that continue some dynamic action under non-equilibrium where energy or chemical substances flow in, have been underwent by our group. Herein, we will talk two results of our research. One is auto-catalytic vesicular self-reproduction, and another is auto-oscillatory flipping motion of organic crystal. These two fundamental results will contribute to create more sophisticated chemical systems having autonomous properties.

**Biography**

Yoshiyuki Kageyama has obtained his PhD from the University of Tokyo in 2006 under the direction of Prof. Shigeru Murata. He continued his study of the construction of biomimetic supra molecular systems based on organic chemistry as a Post-doc in Prof. Tadashi Sugawara's group at the University of Tokyo. Next, he moved to the Faculty of Pharmaceutical Science at Tokyo University of Science as a Post-doc and studied organic photochemistry and molecular-recognition chemistry in aqueous media under the direction of Prof. Shin Aoki. In 2009, he became an Assistant Professor at Laboratory for Condensed Matter Chemistry at Hokkaido University. He worked at Japan Science and Technology Agency as a PRESTO Researcher (2013-2017). His specialty is in physical organic chemistry, especially the kinetic study of organic reactions and supra molecular chemistry.

y.kageyama@sci.hokudai.ac.jp

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