

講演会のご案内

講演者：Otto Dopfer 教授（ベルリン工科大学）

日時：2025 年 4 月 7 日（月）16:00～17:30

会場：講義棟 301 室

題目：“Geometric and Electronic Structures and Chemical Bonding in Silicon Molecules, Ions, and Clusters: Silane Ions, Doping on the Nanoscale, and Interstellar Dust Precursors”

要旨：

We combine infrared and optical laser spectroscopy of mass-selected silicon-containing ions and clusters in the gas phase with quantum chemical calculations to explore their geometric and electronic structure, chemical bonding, and chemical reactivity. For polysilane ions, we observe supersaturation of pentacoordinated Si, three-center two-electron and charge-inverted hydrogen bonds, and the formation of unusual -Si-H-Si- hydride wires. Mixed Si_nX_m clusters (e.g., $\text{X}=\text{C}, \text{O}$) are discussed in the context of doping on the nanoscale and the formation of interstellar silicate dust particles.

Otto Dopfer 教授は、1994 年にミュンヘン工科大学にて博士号取得（物理化学）、バーゼル大学で博士研究員を務めて 2000 年に Habilitation（教授資格）取得、その後、バーゼル大学、ウルツブルグ大学で DFG ハイゼンベルグ・フェローを経て、2006 年にベルリン工科大学 教授に就任し、現在に至っています。また、2018 年からは、東京工業大学（東京科学大学）客員教授も兼務しています。

Dopfer 教授は、レーザー分光と質量分析とを組み合わせた先端的な実験手法で、分子、イオン、クラスターおよびナノ粒子の構造解明において顕著な業績を上げています。研究対象は、分子間力、化学結合の性質、生体・キラル分子認識、溶媒効果、金属有機触媒、プラズマ物理、星間化学など多岐に渡り、学際的な視点で分子分光学の分野を牽引してきています。

今回、東北大学 藤井朱鳥教授が世話人となり、分子科学研究奨励森野基金の森野レクチャー講演者として来日され、国内数カ所での講演会の一つとして、九州大学にもお立ち寄りくださることになりました。

奮ってご参加くださいますよう、ご案内申し上げます。

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Announcement of Visitor's Lecture

Lecturer: **Prof. Dr. Otto Dopfer** (Technische Universität Berlin)

Date and time: **April 7, 2025 (Mon) 16:00 – 17:30**

Venue: **Room #301 of Lecture building** (講義棟 301 室)

Title: “Geometric and Electronic Structures and Chemical Bonding in Silicon Molecules, Ions, and Clusters: Silane Ions, Doping on the Nanoscale, and Interstellar Dust Precursors”

Abstract:

We combine infrared and optical laser spectroscopy of mass-selected silicon-containing ions and clusters in the gas phase with quantum chemical calculations to explore their geometric and electronic structure, chemical bonding, and chemical reactivity. For polysilane ions, we observe supersaturation of pentacoordinated Si, three-center two-electron and charge-inverted hydrogen bonds, and the formation of unusual -Si-H-Si- hydride wires. Mixed Si_nX_m clusters (e.g., $\text{X}=\text{C}, \text{O}$) are discussed in the context of doping on the nanoscale and the formation of interstellar silicate dust particles.

About the lecturer:

Prof. Dr. Otto Dopfer obtained his Ph.D in Physical Chemistry from Technical University of Munich in 1994. He served as a postdoctoral researcher at University of Basel, where he earned his Habilitation in 2000. He then held a DFG Heisenberg Fellowship at University of Basel and University of Würzburg. Since 2006, he has been appointed as a professor at Technical University of Berlin. Additionally, he has also been serving as a visiting professor at Tokyo Institute of Technology (Institute of Science Tokyo) since 2018.

Prof. Dopfer has made significant contributions to the elucidation of structures of molecules, ions, clusters, and nanoparticles through advanced experimental techniques that combine laser spectroscopy and mass spectrometry. His research spans a wide range of topics, including intermolecular forces, the nature of chemical bonds, biomolecular and chiral recognition, solvent effects, organometallic catalysis, plasma physics, and interstellar chemistry. He has been leading the field of molecular spectroscopy from an interdisciplinary perspective.

This time, Prof. Dopfer is hosted by Prof. Asuka Fujii from Tohoku University, visiting Japan as a Morino Lecturer supported by the Morino Foundation for Molecular Science. As a part of his lecture tour across Japan, he will also be visiting Kyushu University.

We cordially invite you to participate in the lecture.

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