Division of Environmental Chemistry
– Chemistry for Functionalized Surfaces –

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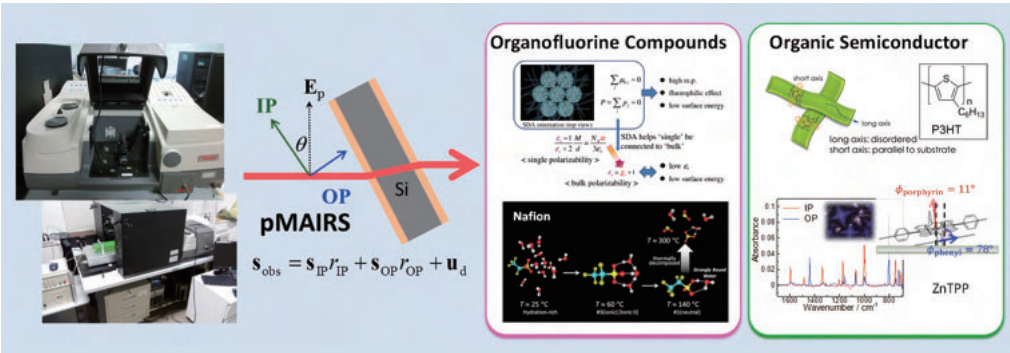
Scope of Research

To understand the chemical structure and properties of a molecular aggregated system, the keywords of molecular interactions and orientation are focused on, and the molecular aggregates are investigated by using originally developed spectroscopic techniques. The current major topics are: (1) perfluoroalkyl-specific properties in a condensed system; (2) controlling factors of molecular packing and orientation in a thin film of an organic semiconductor compound; (3) development of new molecular orientation analytical technique “MAIRS2.”

KEYWORDS

Infrared and Raman Spectroscopy
Surface and Interface Chemistry
Perfluoroalkyl Compounds
Organic Semiconductors
pMAIRS and MAIRS2



Recent Selected Publications

Shioya, N.; Yoshida, M.; Fujii, M.; Eda, K.; Hasegawa, T., Disappearance of Odd-Even Effects at the Substrate Interface of *n*-Alkanes, *J. Am. Chem. Soc*., **146(46),** 32032-32039 (2024).

Araki, T.; Oka, T.; Shioya, N.; Hasegawa, T., Molecular Symmetry Change of Perfluoro-n-Alkanes in ‘Phase I’ Monitored by Infrared Spectroscopy, *Anal. Sci.*, **40(9),** 1723-1731 (2024).

Shioya, N.; Mori, T.; Ariga, K.; Hasegawa, T., Multiple-Angle Incidence Resolution Spectrometry: Applications in Nanoarchitectonics and Applied Physics, *Jpn. J. Appl. Phys.*, **63(6),** 060102 (2024).

Hasegawa, T.; Nakagawara, A.; Takagi, T.; Shimoaka, T.; Shioya, N.; Sonoyama, M., Phonon Modes Controlled by Primary Chemical Structure of Partially Fluorinated Dimyristoylphosphatidylcholine (DMPC) Revealed by Multiple-Angle Incidence Resolution Spectrometry (MAIRS), *J. Chem. Phys*., **160(6),** 064704 (2024).

Shioya, N.; Fang, T.; Fujii, M.; Fujiwara, R.; Hayashi, H.; Yamada, H.; Hasegawa, T., Quantitative Analysis of Photochemical Reactions in Pentacene Precursor Films, *Langmuir*, **40(1),** 1137-1142 (2024).