

Séminaire

Jeudi 6 novembre 2025 à 10h30
Amphithéâtre Henri Benoît

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Understanding of material properties of perfluoroalkyl compounds on primary chemical structures

Organofluorine compounds involving perfluoroalkyl (R_f) groups represented by polytetrafluoroethylene (PTFE) attract keen interests for various practical chemistry fields from basic to industrial researches. The organofluorine science has long been directed mostly to organic chemistry, and physicochemical research is largely behind which is needed for full understanding of the material property from the primary chemical structure. Recently, the Stratified Dipole-Arrays (SDA) theory has been published by our group^[1,2], which comprehensively explains various R_f compound-specific properties for both macroscopic and molecular properties. This theory is built only on fundamental physical parameters of the permanent dipole moment^[3], molecular polarizability, and helical conformation about the R_f group.^[4,5] Through the study, the intrinsic properties of R_f compounds are found to be driven by a totally different mechanism from that for normal hydrocarbons. This chemical concept would be needed for better understanding of material properties of R_f compounds not only for functionalized matters but also for environmental, medical, and industrial sciences.

[1] T. Hasegawa, *Chem. Rec.* **2017**, 17, 903–917.

[2] T. Hasegawa, T. Shimoaka, N. Shioya, K. Morita, M. Sonoyama, T. Takagi, T. Kanamori, *ChemPlusChem* **2014**, 79, 1421–1425.

[3] T. Hasegawa, *Chem. Phys. Lett.* **2015**, 627, 64–66.

[4] C. W. Bunn, E. R. Howells, *Nature* **1954**, 174, 549–551.

[5] T. Shimoaka, M. Sonoyama, H. Amii, T. Takagi, T. Kanamori, T. Hasegawa, *J. Phys. Chem. A* **2019**, 123, 3985–3991.

Les personnes souhaitant rencontrer T. Hasegawa sont priées de prendre contact Marie-Pierre Krafft.