

テーマ : Synthesis of novel SF₅-compounds and materials

While virtually all applied fluorinated compounds and materials are based on the highly stable carbon-fluorine (C-F) bond, the dilemma of environmental accumulation of fluorinated pollutants, such as trifluoroacetate and other PFAS have recently resulted in new strict regulatory proposals and calls for more sustainable solutions. As an attractive alternative to the popular trifluoromethyl (CF₃) group, the pentafluorosulfanyl group (SF₅) features superior molecular characteristics and the SF₅-group has been demonstrated to fully degrade into inorganic fluoride and other benign products. The objective of the proposed work here is to develop novel SF₅-compounds and -polymers in an effort to re-design fluoropolymers towards sustainability. The research plan includes the synthesis of a selection of SF₅-monomers and their subsequent polymerization, as well as postmodifications of olefincontaining polymers, such as poly(butadiene) with SF₅Cl.