# Sulfur Tetrafluoride ($SF_4$) as a Deoxyfluorination Reagent for Organic Synthesis in Continuous Flow Mode

Dominik Polterauer,[†,‡] Paul Hanselmann,[§] Ryan Littich,[§] Clara Bovino, [§] Michael Bersier,[§] Dominique M. Roberge,[§] Simon Wagschal,[§] Christopher A. Hone,*[,†,‡] C. Oliver Kappe*[,†,‡]

[†]Center for Continuous Flow Synthesis and Processing (CCFLOW), Research Center Pharmaceutical Engineering GmbH (RCPE), Inffeldgasse 13, A-8010 Graz, Austria.

[‡]Institute of Chemistry, NAWI Graz, University of Graz, Heinrichstrasse 28, A-8010 Graz, Austria.

[§]Advanced Chemistry Technologies, Lonza AG, CH-3930 Visp, Switzerland

clara.bovino@lonza.com

Fluorinated molecules are prevalent in biologically active substances, as medicinal chemists integrate carbon-fluorine bonds in prospective therapeutic drugs to modulate their metabolic stability for example. This importance has driven the development of methodologies for the introduction of fluorine into organic molecules. Relying on the abundance of carbon-oxygen bond containing molecules, deoxyfluorination is a promising and widely used methodology to achieve this transformation, which is usually costly and/or highly hazardous when performed in batch. We report the development of a deoxyfluorination protocol using sulfur tetrafluoride ($SF_4$) as reagent to prepare organofluorine compounds in continuous flow mode. The method uses mild conditions, without the use of HF, which provides an improved safety profile. The methodology was applied to successfully convert various alcohols, aldehydes, and carboxylic acids to their corresponding fluorinated compounds. Advantages of the protocol include the tolerance of protecting groups, high enantioselective control and easy incorporation of inline reaction monitoring.