Recent Advances in Fluorination Technology for Custom Synthesis at Saltigo

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Abstract
Building upon more than 45 years of expertise in the field of fluorine chemistry Saltigo's broad range of fluorination technologies allow for the generation of arrays of advanced pharmaceutical intermediates. In this presentation we will highlight some recent developments in fluorination technologies and discuss these chemistries as key-methods for the synthesis of challenging pharmaceutical intermediates.

We are continuously developing new methods and technologies to ensure timely and cost effective manufacture at scale. In several case studies we will outline the unique role of HF for the synthesis of various pharmaceutical compounds, we will present Saltigo's new phase-transfer catalyst to enable Halex-reaction of non activated substrates and exemplify PBSF as a new fluorinating agent for the selective fluorination of hydroxyl-compounds on multi ton scale.

Access to Poly-Fluorinated Building Blocks via ElectroChemical Fluorination

Dr. Andrea Missio & Dr. Maurizio Bertola
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Abstract
ElectroChemical Fluorination (ECF) has been one of the technologies most widely used for the production of perfluorinated chemicals, mostly based on chain lenghts of eight carbon atoms. Hystorically, the ECF process converted fully hydrogenated substrates into their corresponding perfluorinated derivatives using anhydrous hydrofluoric acid and electricity as reagents.

$$R_HCOX \xrightarrow[\text{electricity}]{\text{HF}} R_FCOF$$

Due to their environmental burden, C8 and longer chain perfluorinated chemicals are currently under scrutiny. The talk will report a number of strategies, aiming at the replacement of such molecules, based on C3 – C7 chemistry. The ECF technology has successfully produced key intermediates further transformed into a number of poly-fluorinated building blocks carrying useful functional groups.
The prospects for an improved environmental footprint of these substances will be briefly discussed.

"Sulphur - eSSential for life"

Gert de Coster,
Sumitomo Chemical Europe representing Sumitromo Seika
Belgium

Abstract
Our presentation will be about the innovative processes Seika have developed for making high-quality complex sulphur based chemicals on an industrial scale and the application of those chemicals in the manufacture of pharmaceuticals and agrochemicals.

Sulfur Trioxide Amine Complexes: Versatile Reagents in Organic Synthesis

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Abstract
Sulfur is known to form similar compounds as oxygen in organic chemistry, like thiols, thioethers, thio acids and others. However, the organic chemistry of sulfur is dominated by higher oxidation levels of sulfur and here, sulfur trioxide groups and derivatives are often found.

The introduction of sulfur trioxide groups in an organic molecule can be carried out in the simplest way by reacting with sulfur trioxide itself. However, SO_3 shows highly dehydrating properties and hence cannot be used for many reactions with sensitive molecules. Here, various derivatives of sulfur trioxide are applied instead and one specific group are sulfur trioxide amine complexes.

The presented sulfur trioxide amine complexes show different levels of reactivity (and stability) and carry out a wider range of reaction types than only insertion of SO_3. Sulfonation, sulfation and sulfamation are the most prominent reaction types, and here, a higher selectivity can be obtained compared to classical reagents like sulfuric acid, oleum or chlorosulfonic acid.
In addition, other reactions can be carried out with SO_3 amine complexes like a Swern oxidation type reaction, deoxigenation, dehydration as well as carboxamide formation.

The presentation will show typical as well as atypical reaction types of sulfur trioxide amine complexes and special application examples.

Lithium + Boron: Two Elements of Success in High-Performance Fine Chemicals Production

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Abstract
An overview on the latest developments in the field of industrial organometallic chemistry is given with the focus on lithium and boron compounds. This includes technologies for the economic production of the lithium compounds via tailored protocols. Many examples for the selective conversion of the lithium intermediates to "tricky" boronic acids are given, including heterocyclic materials, products with sensitive functional groups or otherwise tricky materials like cyclopropylboronic acid.
Additionally, a new synthesis of previously difficult to make 4-trifluoromethylpyridines is presented, which is based on a cyclisation of precursors accessible via lithium chemistry.

Cryogenic Lithiation Reactions for the Production of Starting Materials for Transition Metal Catalyzed Reactions

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Abstract
The synthesis of boronic acids and other compounds will be presented. These compounds were synthesized via cryogenic lithiation reaction either by Li/Halogen exchange or Li/H exchange. The formation and consumption of the lithiated intermediates were controlled by online IR measurement.
The application of the products for transition metal catalyzed reactions like Suzuki reactions and carbonylation will be discussed in the second part of the talk.
