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http://www.ilv.uvsq.fr/recherche/Echo/Fluor/fluor.html

Keywords: Sulfoniums, sulfilimines, sulfoximines, fluorinated ionic liquid, trifluoromethoxy group, MOFs, antiestrogens

Principal Investigators:

Emmanuel MAGNIER
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Bruce PEGOT
Title: Trifluoromethyl sulfoniums

**Aim:** One step preparation of a library of electrophilic perfluoroalkylating reagents

**Method:** Aromatic functionalization with trifluoromethane sulfinate as key reagents


**Collaborations:** G. Masson (ICSN, Gif sur Yvette)

One pot synthesis

![Reaction scheme](image)

Mechanistical studies

Ionic liquids as new media for electrophilic trifluoromethylation

Trifluoromethylation of enecarbamates

Induced by photoredox catalysis
**Title: Sulfilimes and sulfoximines**

**Aim:** Easy, scalable and reliable synthesis of perfluoroalkylated sulfur (IV) and (VI) compounds

**Method:** Ritter-like reaction between sulfoxide and nitriles. Smooth oxidation of the resulting sulfilimines.


**Collaborations:** Dr. Mireille Blanchard-Desce (ISM, Bordeaux); Pr. G. Vo-Thanh (ICMMO, Orsay)

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New synthetic routes and N-functionalization of sulfoximines

Electrophilic perfluoroalkylating reagents

Super electronwithdrawing groups. Application for fluorescent materials.

Sulfoximines as organocatalysts or ligands for catalysis
Title: Fluorinated ionic liquid as source of fluoride anion

**Aim:** The description of new ionic liquid for the nucleophilic introduction of the fluorine atom

**Method:** Use of cheap KF as primary source of fluorine

**Background:** *Tetrahedron Lett.* 2014, 55, 826
Title: trifluoromethoxy aliphatic compounds

Aim: Preparation of highly functionalized small molecules bearing the OCF₃ moiety

Method: Fluodesulfurization of xanthates

Title: Perfluorinated MOFs (Metal Organic Frameworks)

Aim: Preparation of fluorinated ligands for porous solids

Method: Scalable synthesis of fluorinated terephtalate and pyrazolates derivatives


Collaborations: Dr. C. Serre, Dr. T. Devic, Dr. P. Horcajada (ILV, Versailles)
Title: Fluorinated analogues of natural compounds or of therapeutic interest

**Aim:** Preparation of fluorinated analogues of estradiol or fulvestrant\textsuperscript{TM}, fluorinated derivatives of tamoxifen\textsuperscript{TM}

**Method:** Multistep synthesis starting from the tamoxifen and estradiol core


**Collaborations:** Pr. Guy Leclercq (UJB, Bruxelles)

**Tamoxifene analogues**

![Tamoxifene analogues diagram]

- R-
- CH\(_3\) / tamoxifene
- CF\(_3\)-CH\(_2\)
- CF\(_3\)-CH\(_2\)-CH\(_2\)
- CF\(_3\)O-CH\(_2\)-CH\(_2\)

**Fulvestrant analogues**

![Fulvestrant analogues diagram]

- R = H
  - 15 steps
  - 4.6 % of global yield
- R = F
  - 12 steps
  - 2.2 % of global yield