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Decarboxylative fluorination of carboxylic acids with heterogeneous catalysts

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Fluorinated compounds find application in most fields of the chemical industry, such as agrochemicals, pharmaceuticals and materials. Furthermore, 18F compounds are widely used as tracers for positron emission tomography (PET). Unfortunately, the synthesis of fluorinated molecules is difficult because of the C-F bond strength and, although several breakthroughs have been observed, fluorination reactions are still challenging, particularly, C(sp3)-F bond synthesis. Recently, several studies have been demonstrating that transition metals such as Fe(II), Ag(I) or Pd(II) can react with fluorinating reagents like F-TEDA (SELECTFLUOR, Figure 1) giving new C(sp3)-F and C(sp2)-F bonds. However, many of these methods require stoichiometric metal loadings, and heterogeneous catalysts –typically preferred for several process intensification reasons – are rarely employed. In this context, supported Ag supported nanopaticles on titania have been prepared and, for the first time, effectively employed for decarboxylative fluorination of aliphatic carboxylic acids (scheme 1).

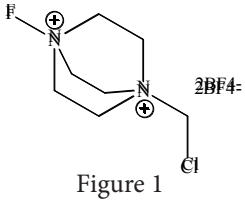

Figure 1

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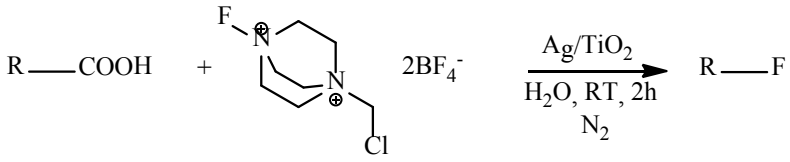

Scheme 1

Biography

Giulia Tarantino is a second year PhD student. She has joined Hammond Research Group at Cardiff University last year in January 2015.

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