



# Palladium Nanoparticles–Polypyrrole Composite as Effective Catalyst for Fluoroalkylation of Alkenes

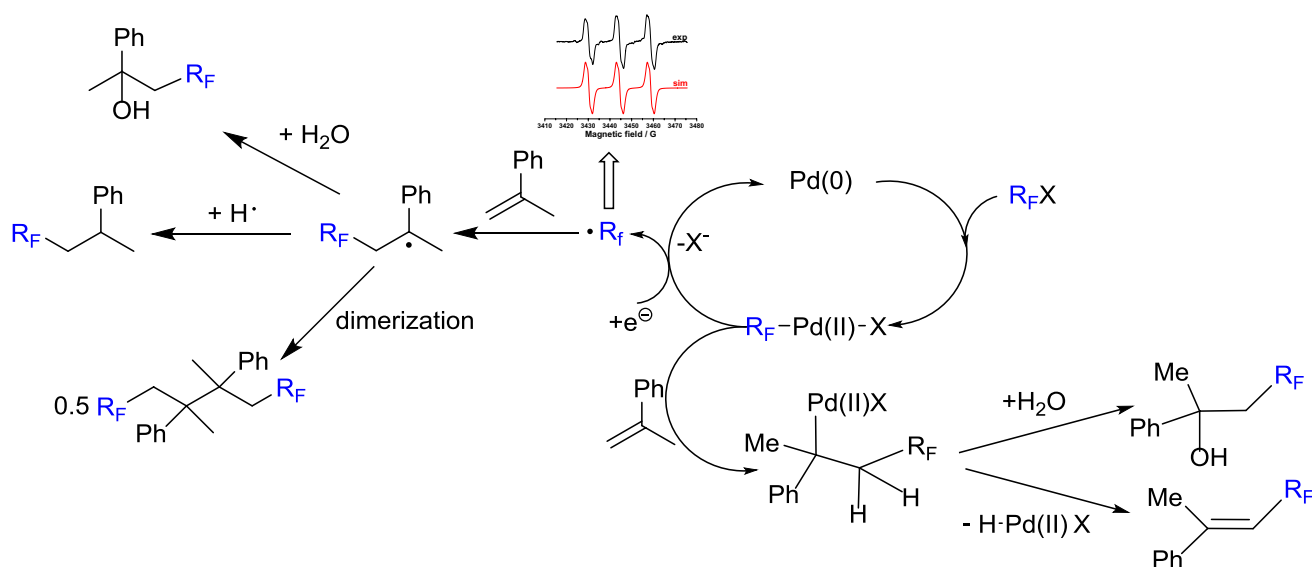
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## Abstract

Palladium nanoparticles–polypyrrole composite (Pd/PPy) catalyzes the addition of perfluoroalkyl halides to olefins to produce a variety of products with good yields. An effective fluoroalkylation technique tested with various olefins, fluoroalkyl halides and Pd/PPy was developed. The reaction proceeds highly efficient under mild phosphine-free reaction conditions with different substrates, easy catalyst recycling and provides a general and straightforward access to fluoroalkylated products. Furthermore, we were able to control whether the addition of perfluoroalkyl occurs with various monomer (fluoroalkylated alkene or alkane with R<sub>F</sub> and OH moieties) or dimer formation (under electrochemical conditions).

## Graphical Abstract



**Keywords** Fluoroalkylation · Nanoparticles · Palladium · Polypyrrole composite

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## 1 Introduction

Palladium-catalyzed coupling of organic halides with olefins is well-established in modern organic synthesis as a procedure for the formation of new C–C bond in a target organic molecule [1–5]. However, curiously enough, the metal-catalyzed fluoroalkylation of alkenes is less studied