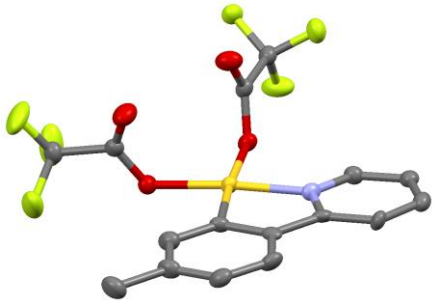
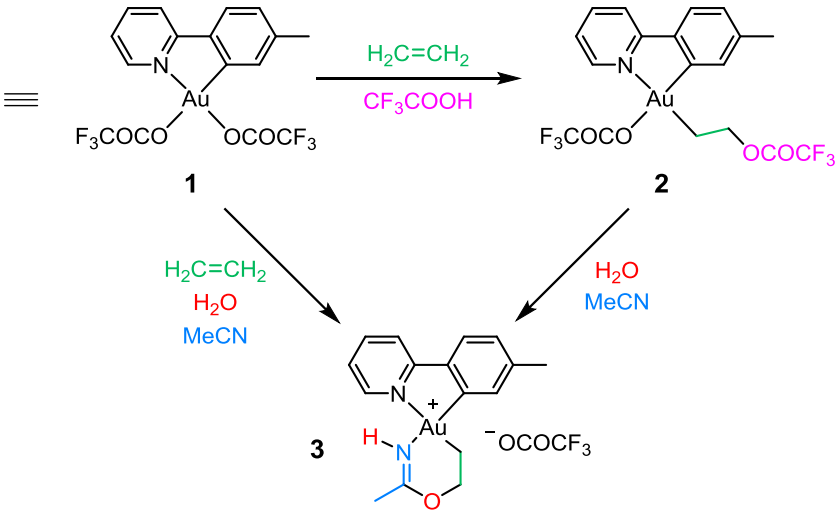
UiO : Kjemisk institutt
Det matematisk-naturvitenskapelige fakultet
Katalyse

Gold catalysts for alkene functionalization





Motivation and challenge: Gold chemistry and gold catalysis are topics of great current interest. Organo-gold metal complexes are developed and allow for chemical transformations that are impossible with other catalysts. Au(III) chemistry has in part been neglected by the active research communities – this offers extra opportunities and challenges for those who are interested…and, indeed, we are interested!

Objectives and scope: We recently discovered that the Au(III) complex **1** (see above) undergoes rapid reactions with ethylene to give the two products **2** and **3**, depending on the reaction conditions. These reactions are *stoichiometric* in nature, and we know a lot about their mechanisms. Based on the mechanistic insight, we want to develop new gold(III) complexes that can facilitate the *catalytic* functionalization of ethylene. This will require the synthesis of new Au(III) complexes in which the aromatic ligand system is replaced by some other ligand system – which we believe we can design, based on the current mechanistic understanding.

Skills to be developed: Organic and metalorganic complex synthesis, handling of organometallic and air-sensitive compounds, extensive use of sophisticated NMR techniques, single-crystal X-ray diffraction analysis, DFT molecular modeling (skill set can be tailored according to student's interests).

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