**Scandium Triflate**

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**Abstracts**

A) Friedel-Crafts alkyl- and acylation reactions usually require a stoichiometric amount of Lewis acid to facilitate complete reaction. However, a catalytic amount of Sc(OTf)₃ is sufficient to facilitate the same transformation.¹

B) Sc(OTf)₃ catalysed three-component couplings can be carried out affording amino esters 3 and γ-acyl-δ-lactam derivatives 4 stereoselectively in high yields.² This is a powerful tool for the preparation of libraries of δ-lactam derivatives. Similar four-component couplings have also been carried out.³

C) Sc(OTf)₃ is a useful Lewis acid catalyst for acylation of alcohols with acid anhydrides and esterification between alcohols and carboxylic acids.⁴

D) Allylation reactions of carbonyl compounds with tetraallyltin (6) occur smoothly under the influence of a catalytic amount of Sc(OTf)₃.⁵ Three component reactions of aldehydes, amines and allylttributyltin (8) also proceed smoothly.⁶ No direct reaction with aldehyde is observed.

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**References and Notes**


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**Preparation**: Scandium triflate is commercially available but can also be prepared from the corresponding oxide (Sc₂O₃) and aqueous trifluoromethanesulfonic acid (TfOH).⁴

Sc₂O₃ + 6TfOH

2Sc(OTf)₃ + 3H₂O

⁵ Scandium triflate can be recovered almost quantitatively after the desired reaction and can be recycled in subsequent reactions without loss of activity.¹

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