

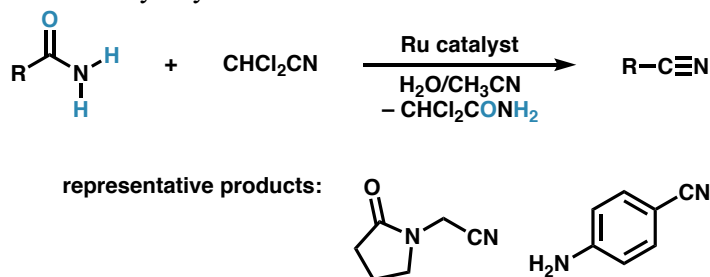
Ruthenium-Catalyzed Transfer Dehydration of Amides to Nitriles

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Metal-catalyzed dehydration of primary carboxamides to nitriles is an important transformation in synthetic chemistry.^[1] Palladium(II)-catalyzed transfer dehydration of amides using nitriles as a water acceptor proceeds under aqueous conditions and is applicable to a wide variety of amides including complex peptides.^[2,3] However, activities of metal complexes other than palladium for this transfer dehydration of amides with nitriles remain unexplored.

We have recently demonstrated that the scope of palladium-catalyzed transfer dehydration of amides to nitriles can be significantly expanded by using electron-deficient nitriles as a water acceptor.^[3] Here, we report that the transfer dehydration of amides to nitriles can be catalyzed by a ruthenium(II) complex. Under aqueous conditions, various aliphatic and aromatic carboxamides were converted to the corresponding nitriles in the presence of the ruthenium catalyst and dichloroacetonitrile. The ruthenium catalyst system showed higher functional group compatibility in the dehydration of amides bearing an aniline moiety as compared with the previous palladium catalyst system.



References

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