

## Organic Chemistry Portal

## Reactions &gt;&gt; Name Reactions

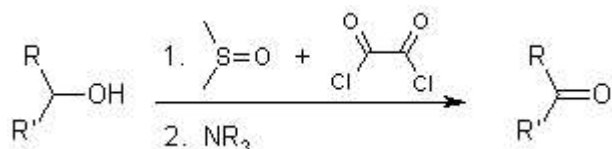
## Further Information

[Literature](#)

## Related Reactions

[Corey-Kim Oxidation](#)[Dess-Martin Oxidation](#)[Jones Oxidation](#)

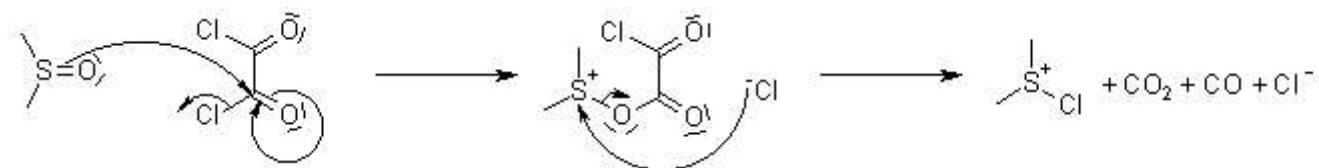
## Swern Oxidation



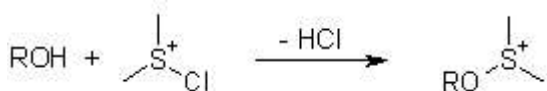
The Swern Oxidation of alcohols avoids the use of toxic metals such as chromium, and can be carried out under very mild conditions. This reaction allows the preparation of aldehydes and ketones from primary and secondary alcohols, resp. . Aldehydes do not react further to give carboxylic acids. A drawback is the production of the malodorous side product dimethyl sulphide.

## Mechanism of the Swern Oxidation

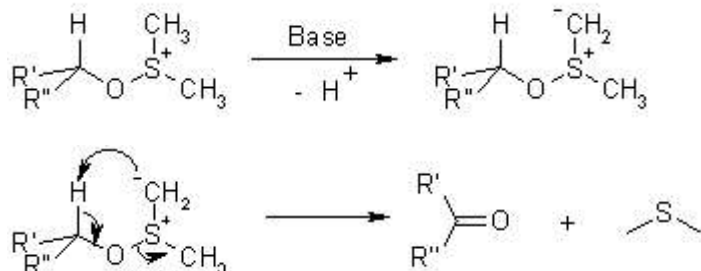
Dimethylchlorosulphonium ion is generated in situ from [DMSO](#) and [oxalyl chloride](#).



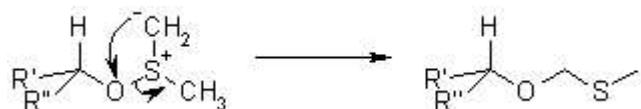
The reaction with an alcohol at -78°C leads to an alkoxysulphonium ion:



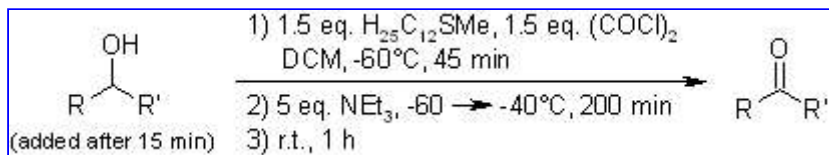
Deprotonation of this intermediate gives a sulphur ylide, which undergoes intramolecular deprotonation via a five-membered ring transition state and fragmentation to yield the product and DMS (odour!):



If the temperature is not kept near -78°C, mixed thioacetals may result:

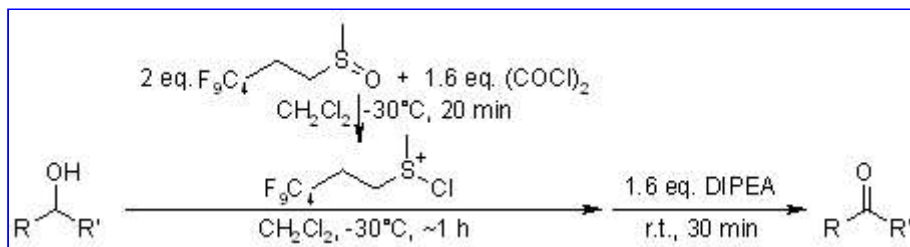


## Recent Literature



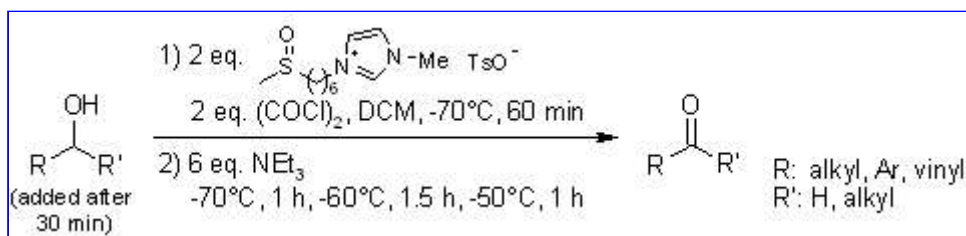
New odorless method for the Corey–Kim and Swern oxidations utilizing dodecyl methyl sulfide (Dod-S-Me)

S.-I. Ohsugia, K. Nishidea, K. Oonob, K. Okuyamab, M. Fudesakaa, S. Kodamaa, M. Node, *Tetrahedron*, **2003**, 59, 8393-8398.



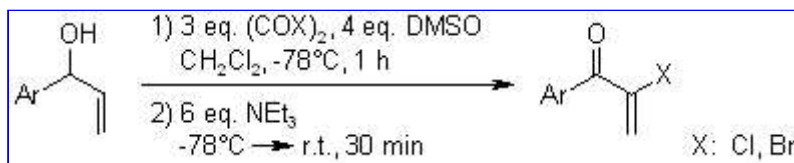
The fluorous Swern and Corey-Kim reaction: scope and mechanism

D. Crich, S. Neelamkavil, *Tetrahedron*, **2002**, 58, 3865-3870.



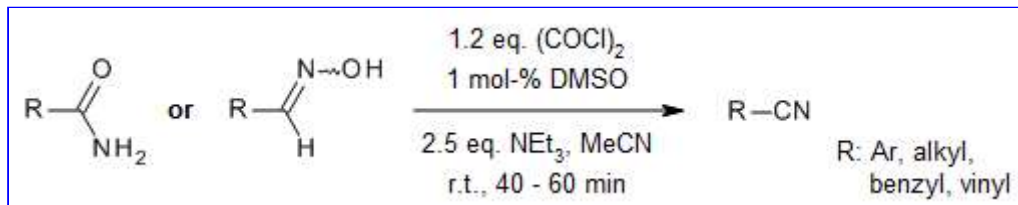
The oxidation of primary and secondary alcohols with ion-supported methyl sulfoxide and oxalyl chloride in the presence of triethylamine in dichloromethane efficiently gives carbonyl compounds in good yields with high purity. Isolation of the product was achieved very easily by simple diethyl ether extraction of the reaction mixture. Furthermore, ion-supported methyl sulfide was recovered in good yield and re-oxidized.

D. Tsuchiya, K. Moriyama, H. Togo, *Synlett*, **2011**, 2701-2704.



Tandem Oxidation/Halogenation of Aryl Allylic Alcohols under Moffatt-Swern Conditions

J. Yin, C. E. Gallis, J. D. Chisholm, *J. Org. Chem.*, **2007**, 72, 7054-7057.



Synthesis of Nitriles from Primary Amides or Aldoximes under Conditions of a Catalytic Swern Oxidation

R. Ding, Y. Liu, M. Han, W. Jiao, J. Li, H. Tian, B. Sun, *J. Org. Chem.*, **2018**, 83, 12939-12944.