

without modification of reaction conditions, protocol was scalable on 10 g scale. This work has been published in the reputed journal the details are as follows

Title of the paper: Mechanistic approach for expeditious and solvent –free synthesis of α -hydroxyl phosphonates using potassium phosphate as catalyst.

Name of the journal : *Comptes Rendus Chimie*

With an objective to develop environmentally friendly methods that obviate the need for potentially toxic metal-based catalysts in organic transformations, during the past two decades, there has been a remarkable increase in interest towards the development of new synthetic methodologies employing various non-conventional acid and base catalysts. One particularly useful mode of catalysis is heterogeneous catalysis and catalytic transformations using solid heterogeneous catalysts have received considerable attention within the synthetic organic chemistry community. Hydroxyl group is one of the most versatile group present in a number of organic compounds like nucleosides, alcohols, phenols, carboxylic acids, etc. and its controlled manipulation during the synthesis is of great value to synthetic chemists. As hydroxyl group can undergo acetylation, halogenation, oxidation etc., its protection becomes essential in multi-step organic synthesis. The deprotection of hydroxyls as THP, TMS and TBDMS ethers can be effected employing simple and mild reaction conditions. Their oxidative deprotection to corresponding carbonyls is also possible. They are preferred only when their use is inevitable. However, TMS ethers are easy to manipulate and are relatively stable. Thus, the protection of hydroxyls as TMS ethers is preferred. The reaction was carried out at room temperature by starting a mixture of alcohol, hexamethyldisilazane (HMDS), catalyst ferric dodecatungstophosphate and dichloromethane as solvent. We have demonstrated for the first time the usefulness of a commercially available and inexpensive ferric dodecatungstophosphate as an efficient, heterogeneous, solid acid catalyst for effect protection of alcohols as trimethylsilylethers. The general reaction is depicted in following scheme.

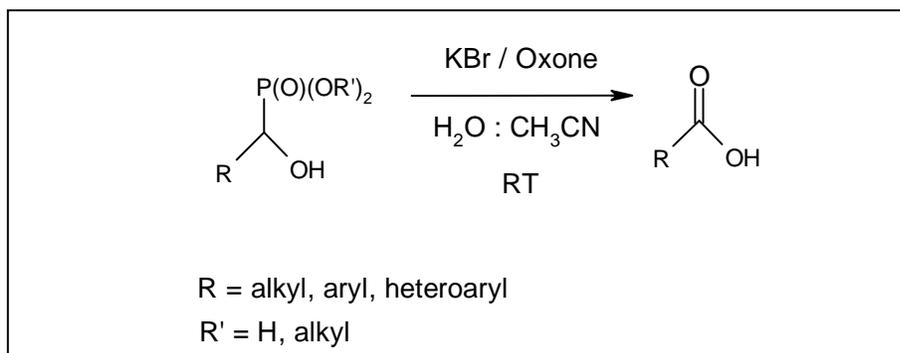


The present protocol typically circumvents the drawbacks associated with the many of the earlier reported protocols. This work has been published in the reputed journal the details are as follows

Title of the paper: Heteropolyacid catalyzed Synthesis of trimethylsilylethers form alcohols

Name of the journal: *International Journal of Basic and Applied Research Special Volume 3*

Oxidation is one of the most fundamental transformations in organic chemistry. Synthesis of carboxylic acid is generally carried out by oxidation of alcohol or its equivalent. Most of the protocols reported for this reaction suffer from limitations such as use of organic solvents, large excess of oxidant, elevated temperature, etc. Reactions involving phosphonate functional group are receiving lot of attraction due to its potential biological activity. In continuation with our work on phosphonate chemistry and use of eco-benign oxidation system using Oxone, herein we are reporting use of Oxone and potassium bromide combination in acetonitrile – water medium for oxidation of alpha-hydroxyphosphonates to acids at ambient temperature. The general reaction is given in following scheme.



Variety alpha-hydroxyphosphonates including aliphatic, aromatic and heterocyclic alpha-hydroxyphosphonates were converted to acids. Uses of simple reaction procedure, high yields in very short time are the major merits of the developed protocol.

Title of the paper: Oxone- KBr Catalyzed Chemoselective Oxidation of Alpha-hydroxyphosphonates to Acids at Ambient Temperature in Acetonitrile Water Medium.

Name of the conference: '11th International Conference on Emerging Horizons in Bio-Chemical Sciences and Nanomaterials (EHBCSN-2013)'

Other transformations were also attempted which have given satisfactory results and further work is going on pertaining to publication of results.

List of publications from the project

- a) Mechanistic approach for expeditious and solvent –free synthesis of α - hydroxyl phosphonates using potassium phosphate as catalyst.

S.D. Mitragotri, M.A.Kulkarni, U.V. Desai, P.P. Wadgaonkar

Comptes Rendus Chimie

- b) Heteropolyacid Catalyzed Synthesis of trimethylsilylethers from alcohols.

S.D. Mitragotri

International Journal of Basic and Applied Research Special Volume 3

- c) Oxone- KBr Catalyzed Chemoselective Oxidation of Alpha-hydroxyphosphonates to Acids at Ambient Temperature in Acetonitrile Water Medium.

'11th International Conference on Emerging Horizons in Bio-Chemical Sciences and Nanomaterials (EHBCSN-2013)'

S.D. Mitragotri