

Performance of W-, Pd-promoted Mo-V-Te-Nb-O_x catalysts prepared using drying control chemical additives in partial oxidation of propane to acrylic acid

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Propane to obtain acrylic acid is attracting much attention due to its advantages over the current process, such as the abundance of propane in natural gas and the price cheaper than the propylene. To success of this process, it is necessary to improve active catalyst which allows high yields of the acylic acid. WO_x is reported to be an active catalyst for the dehydration of alcohols. PdO_x also show an improved activity for the direct conversion of propane to propylene. Futhermore an increase in the surface area of multi mixed metal oxide catalyst modified with DCCA was reported. In this study, we combined the above two approaches, formamide and propionic acid as a DCCA and W-, Pd-addition as a metal promoters, to increase the activity of Mo-V-Te-Nb-O_x catalysts which were prepared by hydrothermal synthesis. The activity for propane oxidation and the selectivity for the acrylic acid production of the prepared catalyst were improved due to an increase in the surface area by the addition of the DCCA and due to the enhancement of the rate determining step (RDS) by the addition of metal promoter.