

An effective approach to enhance catalytic activity in Propane oxidative dehydrogenation by surface grafted single site VO_x moieties over catalytic supports

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The oxidative dehydrogenation (ODH) of propane is regarded as a promising and advantageous strategy for the industrial scale production of propylene which is highly demanded by the chemical industry. ODH represents a viable strategy to complement currently applied technologies such as cracking and non-oxidative hydrogenation. Exothermicity of ODH allows the process to operate under a thermodynamically favorable regime, whereas the presence of oxygen prevents coking at the catalyst surface. Though this process is economically favorable, it suffers a major disadvantage of low selectivity of propylene due to its over oxidation to CO_x. This problem can be solved by correlating structure and activity of catalytic species and deep understanding of mechanism of structural features in reaction. Surface grafting offers a unique feature to understand better structural catalytic activity of relationship and helps to enhance catalytic activity in propane ODH. In current study, with the help of surface grafting we prepared highly dispersed vanadium species over different supports. These highly dispersed vanadium species were characterized by several analytical techniques. It has been observed that these highly dispersed species play a crucial role in order to achieve higher catalytic activity and selectivity towards propylene.

Biography:-

Dr Kushal Deepak Bhatte Postdoctoral Fellow from February 2013- till present. He is one of the group members in the Prof. Jean Marie Basset research group, Catalysis Centre, KAUST, Jeddah, KSA. He completed his Ph.D. Science, April 2008 – October 2012 – Institute of Chemical technology, Mumbai, India under Prof. B. M. Bhanage. He had Industrial experience April 2007 to March 2008- IPCA LABS LTD, API R & D, Multistep drug synthesis.