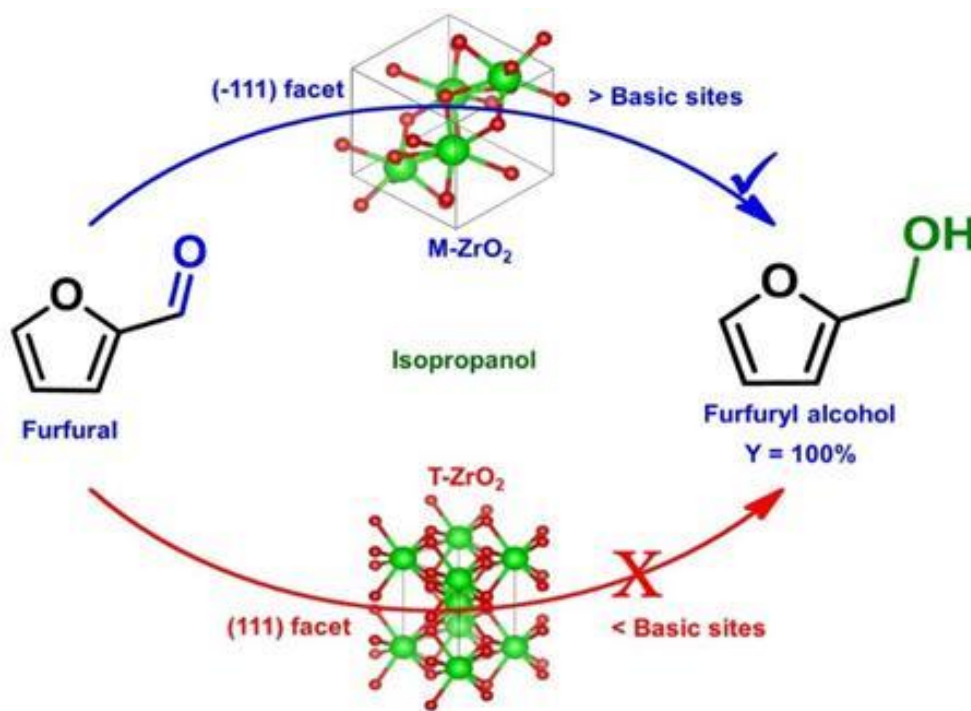


Selective production of value-added bioalcohols from bioaldehydes

A group of scientists at the DBT's Center of Innovative and Applied Bioprocessing (DBT-CIAB), Mohali has developed a catalytic process for the selective transformation of various bioaldehydes to corresponding bioalcohols with non-precious metal oxide catalyst under mild reaction conditions. Recently, up-gradation of biomass-derived substrates into value-added chemicals has been increasingly focused, as they have great potential to substitute fossil-based chemicals. In this context, especially, hydrogenation of furfural to furfuryl alcohol (precursor for making foundry resins, synthetic fibres, lubricants and other fine chemicals) is one of the essential transformations.



This study reveals the influence of the crystal phase and facet, and the active sites of zirconium oxide (ZrO₂) on the conversion of bioaldehydes. The exciting part of this study is that ZrO₂-monoclinic phase - showed remarkable catalytic activity towards the formation of furfuryl alcohol (FOH) from furfural (FFA). Whereas ZrO₂, having mostly tetragonal phase (T-ZrO₂-U-N) displayed a very low catalytic activity. Insight studies related to characterisation revealed that (-111) facet of monoclinic ZrO₂ along with basic sites played a critical role in the activity.

There is no report related to ZrO₂ for the transformation of FFA to FOH has been disclosed based on the role of crystal phase and facet, and basic active site on the yield of FOH till now.

These research findings have been accomplished by a team of CIAB's researchers including Dr S. Saravanamurugan (Lead Scientist), Sahil Kumar and Mayanglambam Manolata Devi. The findings been recently published in *Catalysis Science & Technology*.

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