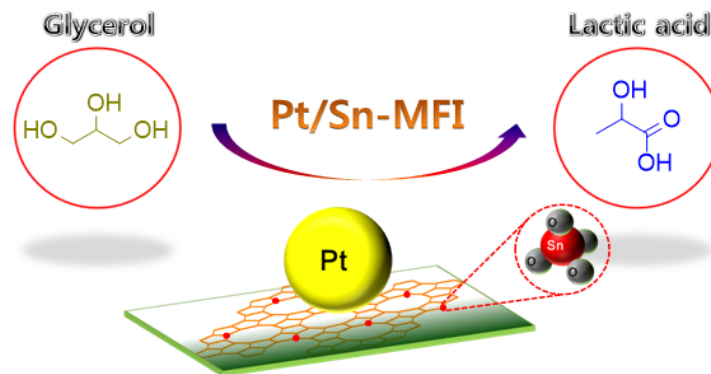


# Synthesis of Lactic Acid from Glycerol using Pt/Sn-MFI

## Scientific Achievement

We developed a highly efficient, base-free reaction pathway to selectively convert glycerol into lactic acid (LA) in an aqueous phase via a cascade of oxidation reaction and Lewis acid catalyzed isomerization reaction.

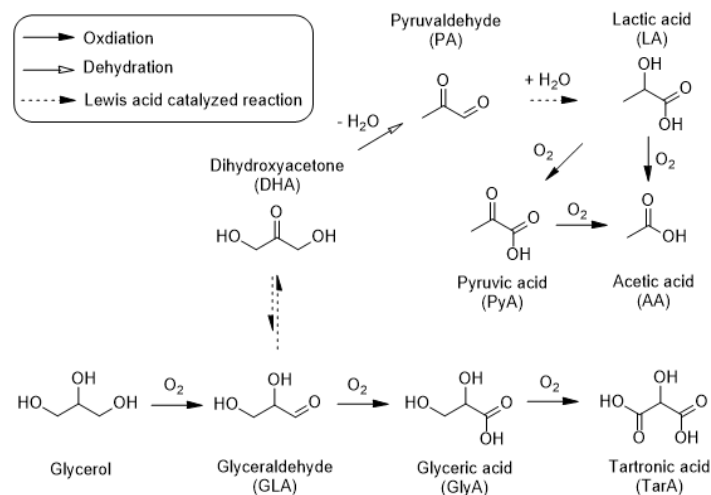


## Significance and Impact

- 80% selectivity to LA was achieved at 90% conversion of glycerol using a bifunctional Pt/Sn-MFI catalyst. This provides a highly efficient way to convert the biodiesel by-product into renewable plastic.

## Research Details

- Selective oxidation of glycerol to glyceraldehyde (GLA) proceeds on Pt catalyst followed by Sn-MFI Lewis acid activity converting GLA into dihydroxyacetone (DHA) and DHA into the final product LA
- The superior performance of Sn-MFI is mainly due to its microporous structure and accessible Lewis acid Sn sites



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Work was performed at the University of Massachusetts by Dr. Fan's group

