

## n-butane partial oxidation to maleic anhydride under transient regimes

Maleic anhydride (MA) is commercially produced from partial oxidation of n-butane by air over vanadium pyrophosphate (VPP) catalyst. There has been a huge research interest to better understand the different aspects of this industrially attractive reaction including mechanism, dynamic catalyst phase evolutions as well as the effect of redox operating conditions such as gas/solid residence time, temperature, pressure and gas composition on the reaction yield.

In this research program we have focused on investigating the effect of a wide range of redox conditions covering the actual conditions existing in industrial fixed bed, fluidized bed and circulating fluidized bed reactors. We have simulated the transient redox conditions by conducting experiments in Hiden's Catlab micro-reactor coupled to online MS. We could characterize the transient behaviour of the VPP catalyst under different operating conditions and also we have modeled the underlying transient kinetics of this complex reaction over the full range of studied operating conditions.

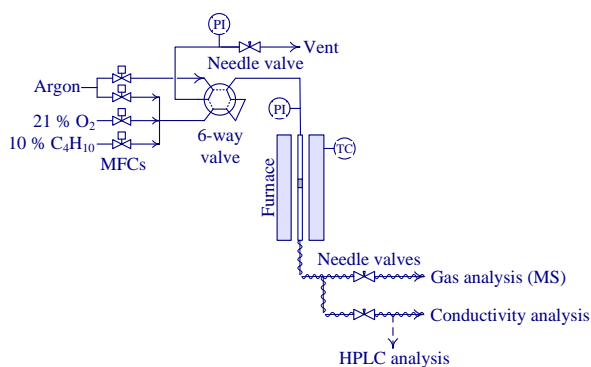


Figure 1: Redox micro-reactor setup

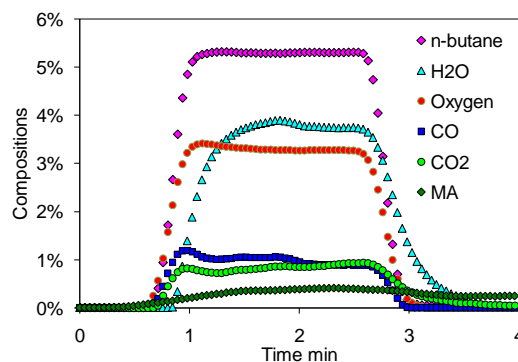


Figure 2: MS transient response

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### Paper Reference:

"Maleic anhydride yield during cyclic n-butane/oxygen operation", Catalysis Today, Volume 157, Issues 1-4, 17 November 2010, Pages 334-338

### Hidden Product:

CATLAB-PCS Microreactor

Follow the link to the product catalogue on our website for further information:

<http://www.hiddenanalytical.com/index.php/en/product-catalog/49-catalyst-characterisation>

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