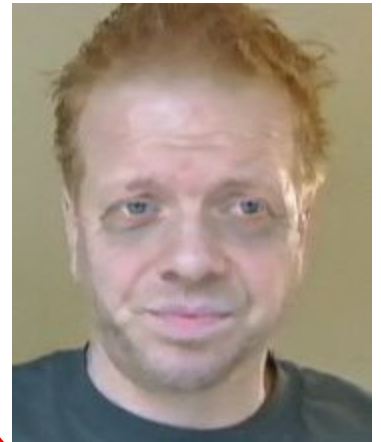


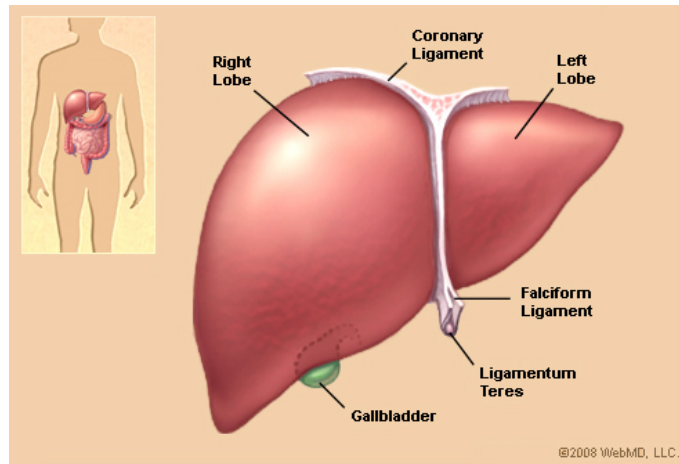


Toni Riittonen

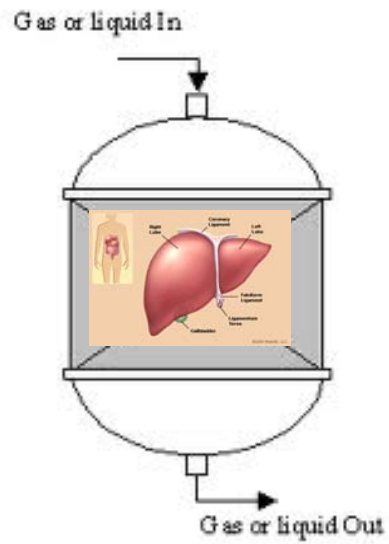
Poke june 2013





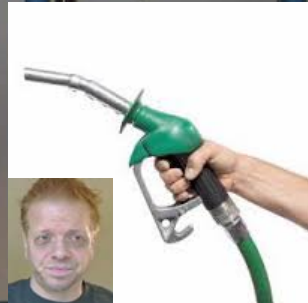


Joke?? No!



So...

1. Forest based residues (sugars) are fermented to bio-ethanol
2. Ethanol is pumped through fixed bed continuous operating reactor containing a heterogenous catalyst
3. Different valuable chemicals are obtained such as **1-butanol** (also ethyl acetate)

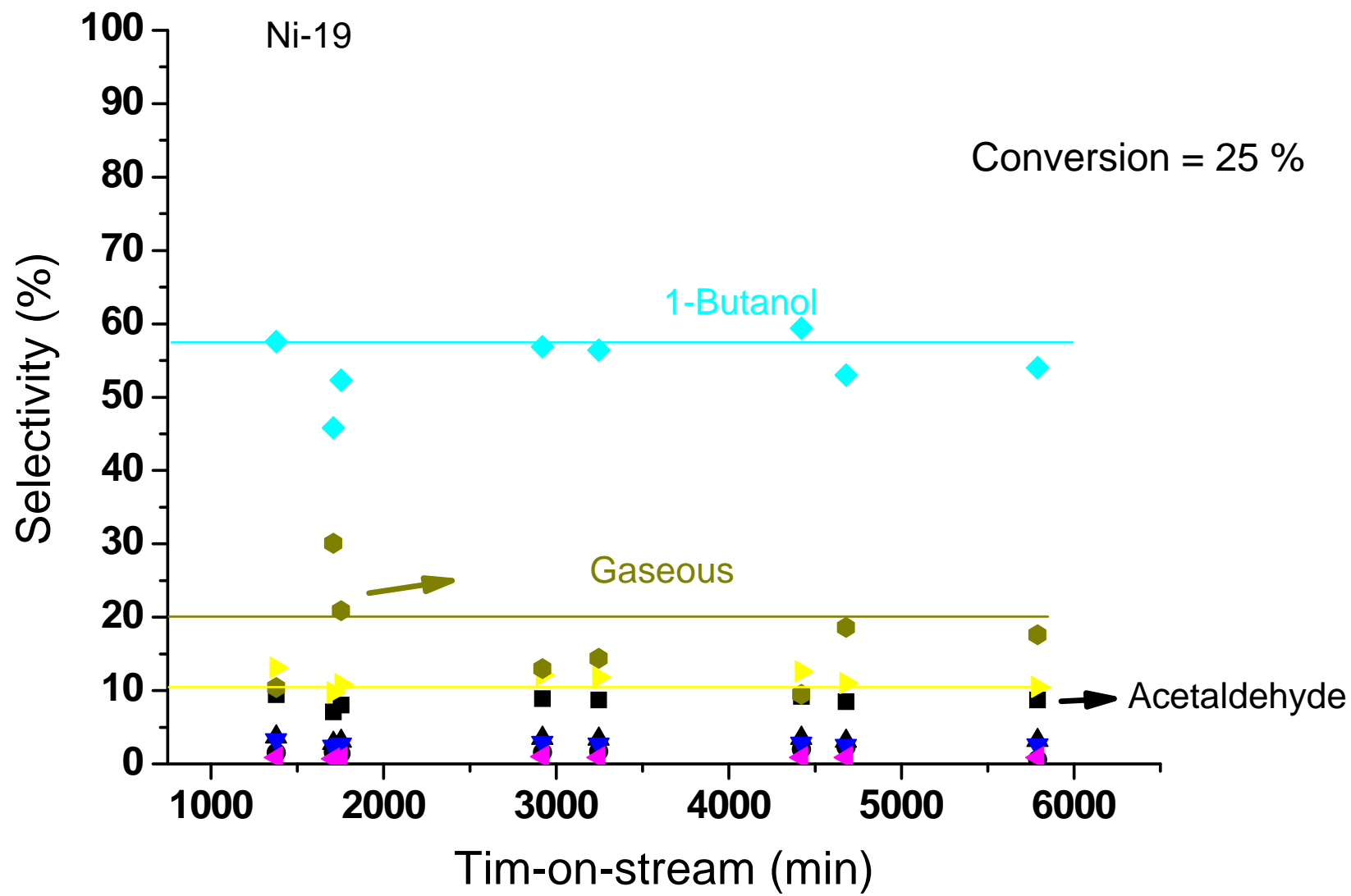


Toni R.
Do not rate

190
190

0.17
0.17

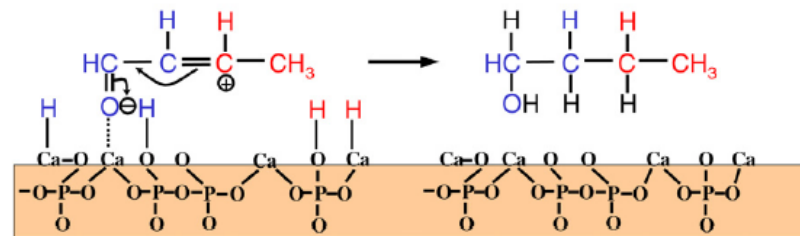
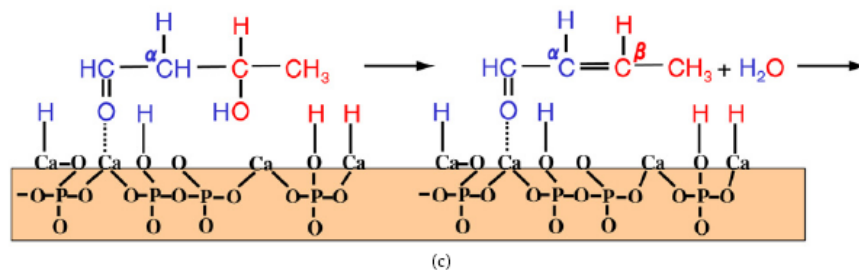
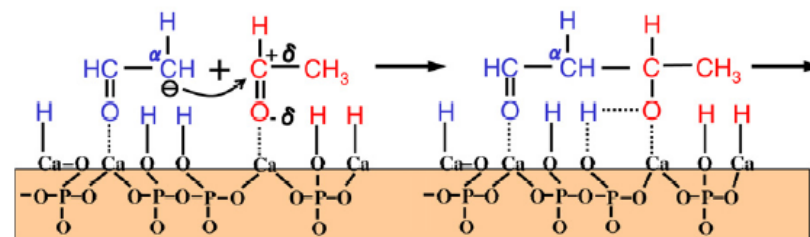
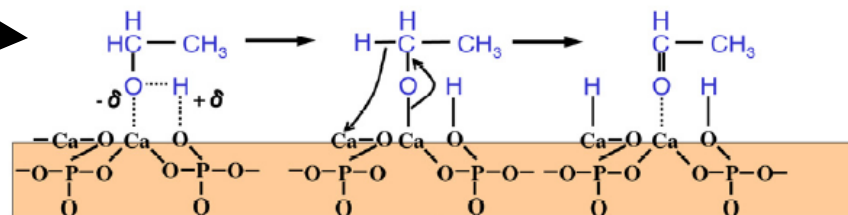
6.139



Catalyst structure!

- Must be crystalline
- Alumina as support
- Metal coating vital (Cu, Co, Ni)
- Entirely different selectivity profiles

Reaction mechanism – aldol condensation



Tsuchida et
al. 2008

And today...

Totally home-made catalysts containing a very precise crystalline structure