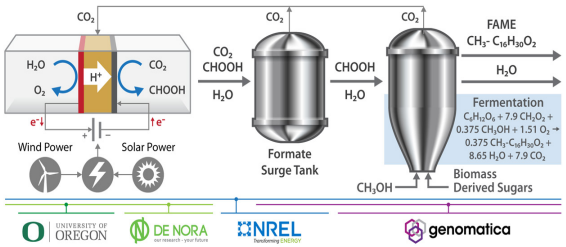
Formate as an Energy Source to allow Sugar Fermentation with no net CO_2 Generation: Integration of Electrochemistry with Fermentation



- *Develop and demonstrate an integrated process that electrochemically generates formate from CO_2 and use the formate as an energy source for the fermentation of sugars to fatty acid methyl esters (FAME) without net CO_2 generation.*
- *Formate provides reducing equivalents for sugar fermentation.*
- *Chemical looping reactor system that takes advantage of intermittent low-cost electricity from wind and solar resources.*

PI: Randy Cortright, NREL

Electrochemistry:

NREL - KC Neyerlin, Leiming Hu, Audrey Taylor

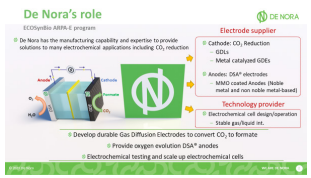
DeNora – Andrew Smeltz, Namal Wanninayake

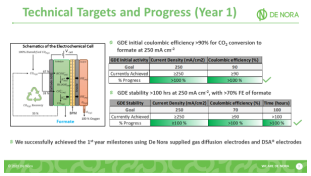
Oregon – Prof. Shannon Boettcher, Olivia Traenke

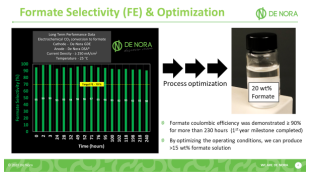
Enzyme Engineering

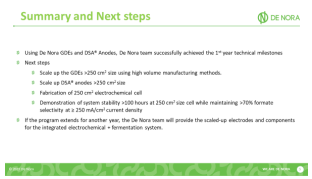
Geno – John Trawick, Joseph Fromm, Mike Noble, Amit Shah, David Zhang

Electrochemical Generation of Formate from CO2 (DeNora, NREL)

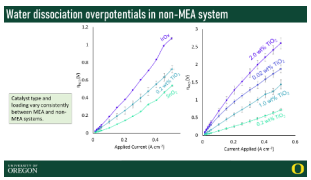


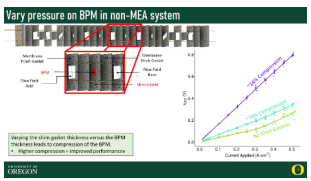


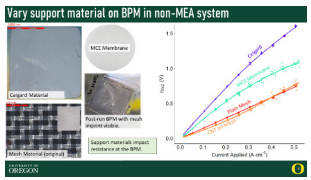


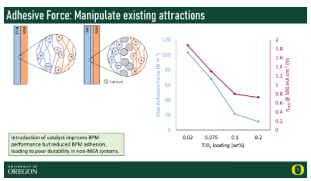


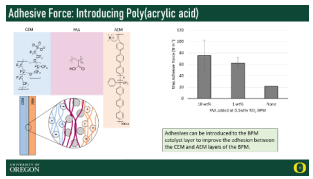
Bi-Polar Membrane Development University of Oregon



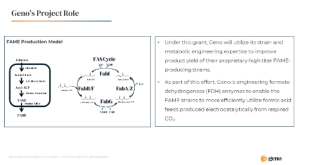


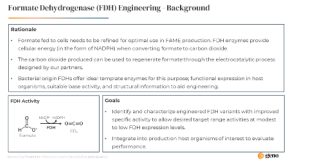


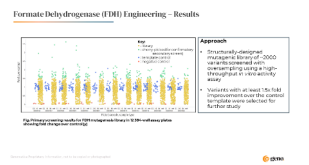


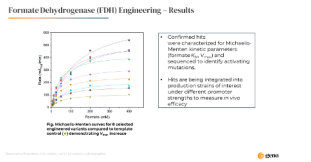


Enzyme Engineering - Geno

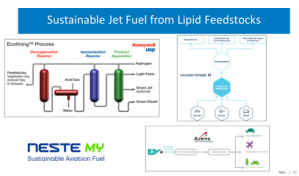


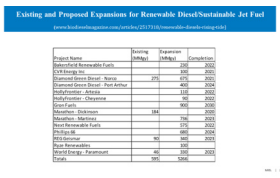


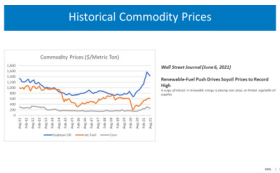




Tech to Market - Feedstock for Sustainable Aviation Fuel







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