

Systems and Methods for Producing Liquid Hydrocarbon Fuels

Researchers at the University of South Florida have developed a novel method to produce Liquid fuels from natural gas.

There is a significant challenge in our modern world to develop an improved process for manufacturing synthesis gas. Synthesis gas may be made from natural gas, gasified coal, and other sources. Due to the urgent importance of finding solutions for the advancement of emerging energy practices, it would be very useful to develop an effective process to maximize production and minimize production costs.

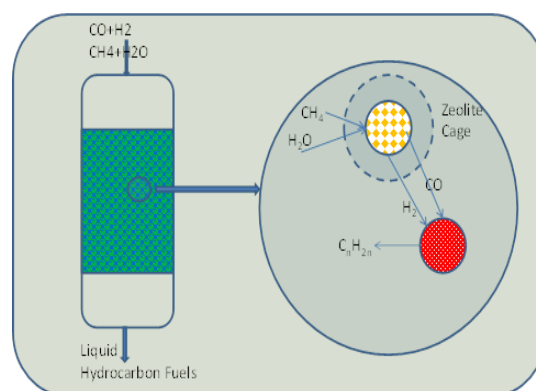
USF inventors have successfully developed a novel method that combines the reforming process and Fisher-Tropsch Synthesis into a single operation within a single reactor. The reactor contains a hybrid catalyst system capable of combining endothermic steam reforming with exothermic Fischer-Tropsch reactions into a single intensified process thus avoiding the costly energy penalties and mass recycles. This radically alters the economics.

This technology is applicable to the chemical industries and to all other energy production industries.

ADVANTAGES:

- Process integration leads to improved economics
- Separations combined with reactions decreases energy costs
- Atom efficiency for process improved
- Improved heat transfer leads to high efficiencies
- Fuel produced is similar to that derived from petroleum
- Adaptable to many fuel feedstocks

Combined Process that Utilizes a Hybrid Catalyst



Low temperature reforming catalyst used in parallel with the high-temperature Fisher-Tropsch Synthesis catalyst