

Liquid Fuels from CO₂, Water and Sunlight

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Abstract

Synhelion develops a technology for the conversion of CO₂ and water to low-CO₂ emission transportation fuels by combining proprietary high-temperature thermochemical processes with commercial solar concentrating systems. Solar concentrating systems use the entire solar spectrum and deliver high-temperature heat directly to the chemical process, bypassing the efficiency-limiting conversion steps of electricity generation, electrolysis, and reverse water gas shift. Together with innovative technologies of the solar receiver, the thermochemical-reactor and the thermal-energy storage, this solution can exceed the energy conversion efficiency of alternative processes, exhibit substantially lower production costs, and ensure scalability to replace fossil fuels at the global level.