
Implications for Other Applications Many chemical process systems currently are based on combusting a fuel in order to drive endothermic chemical operations (reactions, ...

Solar fuels enable a pathway for sustainable generation of platform chemicals such as butene directly from solar energy, using CO2 as a feedstock. Industry currently derives butene from ...

Abstract--In this paper, a solar hybrid power generation system with chemical looping combustion (CLC) is analyzed. Using concentrated solar thermal energy at about 500°C as a heat source ...

To this end, a methanol-based energy storage system is proposed to meet regional power demand by combining a hybrid wind-solar source. This work studies capacity ...

Considering the formidable challenges of substantial energy consumption and complex system of CO 2 capture in hydrogen production and power generation from fossil fuel, ...

In this Review, we compile and summarize valuable chemical reactions in solar-driven electrolysis systems, with an emphasis on their potential economic impact. We present ...

Sunlight is a powerful energy source that scientists can leverage to unlock important chemical conversions. In this study, researchers used solar energy to convert carbon dioxide ...

By converting solar energy into chemical energy rather than thermal energy, the system can be coupled with highly efficient, low-cost, combined-cycle power generation technology and ...

This paper evaluates the thermo-economics of power-to-chemicals using solar energy, with the chemicals being methane, methanol, and gasoline. In addition to ...

Solar power is the conversion of sunlight into electricity, either directly using photovoltaic (PV), or indirectly using concentrated solar power (CSP). The research has been ...

In a groundbreaking advancement that could redefine the chemical industry"s environmental footprint, researchers from the University of Cambridge have unveiled a ...

The session will provide a forum for the exposure and exchange of ideas, methods and results in solar energy science and engineering for power generation and chemical processing.

In contrast, using concentrated solar power (CSP) to splitting water can directly convert solar energy into chemical energy with less irreversible losses and higher energy ...

OverviewBackgroundChemical storageApplicationsExternal linksSolar chemical refers to a number of possible processes that harness solar energy by absorbing sunlight in a chemical reaction. The idea is conceptually similar to photosynthesis in plants, which converts solar energy into the chemical bonds of glucose molecules, but without using living organisms, which is why it is also called artificial photosynthesis. A promising approach is to use focused sunlight to provide the energy needed to split water int...

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