

**ADVANCES IN HIGH-TEMPERATURE
SOLAR ENERGY CONVERSION**

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ABSTRACT High-flux solar irradiation obtained with optical concentrators is an excellent source of clean process heat for high-temperature physical and chemical processing. Solar thermal power, the area that has traditionally driven developments in concentrating solar technologies, experiences renewed research interests, primarily in the context of large-scale dispatchable power generation. The area of solar thermochemistry aims at direct thermochemical production of chemical fuels and commodity materials. Cheap and efficient solar production of synthesis gas, the precursor to synthetic drop-in hydrocarbon fuels such as petrol, diesel and kerosene, is an intriguing approach to transform today's fossil-based to tomorrow's renewable-based transportation sector. In the most ambitious scenario, synthesis gas is obtained from sunlight, water and captured carbon dioxide. This presentation gives an overview of recent developments in high-temperature solar thermal and thermochemical processing, from basic research to applications.