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Water Splitting with Materials and Sunlight

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Sun Catalytix has been developing technology for energy storage and the generation of renewable fuels in an ARPA-E sponsored program. The program has focused on the development and deployment of low-cost earth-abundant catalytic materials coupled to light-absorbing semiconductor systems to capture and convert solar energy into chemical species. This talk will focus on recent work done to couple cobalt-based water-oxidation and nickel-based hydrogen evolution catalysts with silicon-based solar cells. The results demonstrate direct wireless coupling of solar collection with catalytic materials and operate in relatively benign conditions at reasonable conversion efficiency. These results suggest development pathways for solar hydrogen generation using catalyzed particulate solar absorbing materials. Such pathways will be discussed as they may offer relevant means to generate solar-derived hydrogen as a cost-effective fuel for the future.