

Abstract Submitted  
for the MAR13 Meeting of  
The American Physical Society

**Accelerated discovery of materials for solar fuel cells at JCAP<sup>1</sup>**  
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Center for Artificial Photosynthesis, California Institute of Technology — High-  
Throughput Experimentation group at the Joint Center for Artificial Photosyn-  
thesis has a formidable mission: provide accelerated discovery of new photon ab-  
sorbers and heterogeneous (photo)catalysts for solar fuel cells at the rate far beyond  
anything attempted in material science to date. The HTE pipeline includes mate-  
rial synthesis, screening and characterization. Within the first year of operations,  
our fabrication capabilities have risen to 100,000 samples per day using combina-  
torial inkjet-printing. Such high rate of sample production is setting daunting re-  
quirements on screening methods. We are developing and testing methods for fast  
bandgap measurements, using colorimetry and uv-vis spectroscopy. Material thick-  
ness and roughness is determined by confocal chromatic spectroscopy. Catalytic  
activity is screen through a massively parallel bubble screen and a fast scanning  
droplet (photo)electrochemical cell. Concurrently, we are developing protocols for  
high-throughput determination of phase and structure (XRD), surface composition  
and chemistry (XPS), surface area measurement, etc. on the characterization side  
of the pipeline.

<sup>1</sup>This work was performed at Joint Center for Artificial Photosynthesis, a DOE En-  
ergy Innovation Hub, supported through the Office of Science of the U.S. Department  
of Energy under Award No. DE-SC0004993

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Date submitted: 08 Nov 2012

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