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High-throughput synthesis and screening of photon absorbers and photocatalysts for solar fuel cells SLOBODAN MITROVIC, MARTIN MARCIN, SEAN LIN, JIAN JIN, Joint Center for Artificial Photosynthesis, California Institute of Technology — Joint Center for Artificial Photosynthesis is a D.O.E. Energy Innovation Hub conceived to develop solar fuel cell technologies by bringing together the critical mass of scientist and engineers nationwide. The High-Throughput Experimentation group at JCAP is developing pipelines for accelerated discovery of new materials - photon absorbers, photoelectrochemical and electrochemical catalysts - using combinatorial approaches (ink-jet, sol-gel, physical vapor deposition). Thin films of semiconducting metal-oxides, sulfides, nitrides and phosphides are synthesized and screened in high-throughput according to their optical and photoelectrochemical properties, as well as structure and phase. Vast libraries of materials and data are generated and made available to inside and outside research groups. Here we present data on binary, ternary and quaternary metal-oxide systems prepared by the ink-jet technology. The systems include tungsten-based photo-absorbers and nickel-iron-based catalysts for water splitting.

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