Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

The Interface Between Chemical and Oxide Materials in the DSPEC.[1] THOMAS MEYER, LEILA ALIBABAEI, BENJAMIN SHERMAN, MATTHEW SHERIDAN, University of North Carolina at Chapel Hill, DENNIS ASHFORD, Eastman Chemical, ALEX LAPIDES, KYLE BRENNAMAN, ANIMESH NAYAK, SUBHANGI ROY, University of North Carolina at Chapel Hill
— Significant challenges exist for both chemical and oxide materials in the Dye Sensitized Photoelectrosynthesis Cell (DSPEC) for water oxidation or CO2 reduction. They arise from light absorption, the energetics of electron or hole injection, the accumulation of multiple redox equivalents at catalysts for water oxidation or water/CO2 reduction in competition with back electron transfer, and sustained, long term performance. These challenges are being met by the use of a variety of chromophores (metal complexes, organic dyes, porphyrins), broad application of nanoparticle mesoscopic oxide films, atomic layer deposition (ALD) to prepare core/shell and stabilizing overlayer structures, and recent advances in the molecular catalysis of water oxidation and CO2 reduction.

[1]UNC EFRC Center for Solar Fuels, an Energy Frontier Research Center funded by the U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences under Award Number DE-SC0001011

Thomas Meyer
University of North Carolina at Chapel Hill

Date submitted: 01 Oct 2015 Electronic form version 1.4