

TSF16-2016-000052

Abstract for an Invited Paper  
for the TSF16 Meeting of  
the American Physical Society

**Role of Interface in Stability of Perovskite Solar Cells.<sup>1</sup>**

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Perovskite solar cells (PSC) are promising devices for help meeting future energy challenges due to their low cost and comparable efficiencies with other PV technologies. However, long term stability of PSCs remains the major roadblock for large scale commercialization. In my talk, I will review and discuss different device layouts and summarize their progress on performance and stability. In particular, I will discuss the mechanism of perovskite thermal decomposition on ZnO electron transport layer and possible mitigation strategies. I will also present theoretical results of our recent study, where we have predicted the existence of self-trapped polarons in the organohalide lead perovskites using DFT+U methodology. The plethora of materials and interfaces between materials available for PSC obscures the larger challenge in PSCs, long term stability. Future research should focus on fundamental understanding of the interfaces not only for charge transport, but for the long term reliability of PSC if these devices are to move from laboratory settings to industrial production.

<sup>1</sup>Supported by ACS PRF 56095-UNI6 (PM Dr. Askar Fahr) and DoD W911NF-16-1-0518 (GOR Dr. Paul Armistead)