Control of Perovskite-Oxide Interfacial Defects

Title: Enabling 3rd Generation Photovoltaics by Controlling Perovskite-Metal Oxide Interfacial Layer Defects

Invention: Perovskite photovoltaics (PV), considered to be third generation PV, have attracted recent investment. These perovskite PVs have great potential to increase solar energy conversion efficiency and decrease the cost of solar energy cell production. Current perovskite PV performance is limited by defects at the interface between the perovskite active layer (PAL) and the metal oxide layer. This technology mitigates undesirable interactions between the PAL and metal oxide layer and provides a scalable, production method for PAL-metal oxide multilayer materials.

Background: Renewable energy has experienced major breakthroughs in the last few years, with solar energy being increasingly popular. “First Generation” silicon wafer-based solar cells and “second generation” thin silicon-based films may be replaced by “third generation” photovoltaics with significantly higher solar energy conversion efficiency.

Applications:

- Perovskite PV solar cells
- Electrochromic devices incorporating perovskite structures and interfaced with a metal oxide
- Light emitting diodes (LEDs)
- Other perovskite electrochemical systems

Advantages:

- Improved economics due to enhanced durability and performance
- Scalable production method
Licensing Manager:
Laura Silva
LauraS@tla.arizona.edu
(520) 626-1557

Inventors
Neal Armstrong
Professor, Chemistry & Biochemistry
Richard Shallcross
Research scientist, CBC