Enhanced Photon Recycling in Multijunction Solar Cells

**Scientific Achievement**

We demonstrate improved multijunction (MJ) solar cell performance by incorporating a low refractive index interface between subcells, enabling enhanced photon recycling.

**Significance and Impact**

Advanced photon management in this new device design can be applied to practical multijunctions for high-efficiency full-spectrum cell operation while eliminating lattice and current matching requirements.

**Research Details**

- Vertically stacked architecture is realized by epitaxial liftoff and transfer printing, avoiding complexities in design associated with other spectral splitting methods.
- Released thin-film GaAs micro cells are printed on structures with low-index air and SU-8 interfaces.
- These devices exhibit enhanced photon recycling and increased open-circuit voltage.

Work was performed at UIUC and Berkeley