Ferroelectric Semiconductors: Making the Most of the Sun

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- For PV solar energy the levelized cost of energy (LCOE) remains high, demanding innovations that can lead to higher efficiency and reduce materials cost.

- The best single-junction cells have a theoretical power conversion efficiency limit of ~33%, convert and capture only ~20% of incident solar power, and require a junction or interface.

- Polar oxide semiconductors can separate photo-excited carriers without an interface, but do not typically absorb in the visible solar spectrum. New complex oxides composed of earth-abundant elements[1], and scalable methods of preparing perovskite films[2] are attractive and promising.

[1]I. Grinberg *et al*. *Nature* 503, 509-512 (2014)
[2]A. R. Akbashev *et al*. *Nano Lett* 14, 44-49 (2014).

Illustration courtesy of F. Macera