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Title: How to Maintain the Stability of Commercial Solar Cells?

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See her publication: https://rb.gy/vtlwrb

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How to Maintain the Stability of Commercial Silicon Solar Cells?

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Abstract: Passivated emitter and rear cell (PERC) silicon solar cells are dominating the PV market. The drastic efficiency enhancement and cost reductions of this technology have driven a rapid global uptake of solar PV, which is required to tackle CO_2 emissions. This technology represents the lowest cost in terms of dollars/watt. However, it suffers from bulk-related degradation mechanisms known as light and elevated temperature-induced degradation (LeTID) that substantially reduce the performance of modules in the field, which is not yet fully understood. For this technology to succeed, it is critical to find industrial solutions to mitigate degradation. This talk demonstrates the techniques to mitigate LeTID in the PERC solar cells by controlling the thermal process, making them stable upon installation in the normal operating field. By controlling the thermal process before (pre-fire annealing) and after (post-fire annealing) the contact formation firing, a novel LeTID elimination strategy is developed with 5 seconds (post-fire annealing) and 3 minutes (pre-fire annealing) process durations. Transferring these approaches to commercial PERC cells with some modification, the loss of cells efficiency is suppressed to $\leq 1\%_{rel}$ from $\sim 5\%_{rel}$. The demonstration of these degradation mitigation strategies with short time durations may have a profound impact in eliminating degradation in commercial silicon solar cells, which will help to further reduce the levelized cost of electricity (LCOE) of solar PV.

Short biography: Dr. Chandany Sen is currently a post-doctoral researcher in the school of photovoltaic and renewable energy engineering (SPREE) at UNSW Sydney, Australia, where she focuses on the reliability of commercial silicon solar cells. She grew up and finished high school in Stung Treng Province, a rural part of Cambodia. She completed her bachelor's degree in physics in 2008 at the Royal University of Phnom Penh (RUPP), Cambodia, and her master's degree in Renewable Energy Engineering in 2012 at Inha University, South Korea. Later, she worked as a Renewable Energy Project Developer in the Swiss and Japanese based in Cambodia and as a lecturer at RUPP Built Bright University (BBU), Cambodia. In 2017, she started her PhD at UNSW Sydney, Australia, and finished it early this year. During her PhD, she worked on understanding and mitigating defects in commercial silicon solar cells and has published several research articles in the top journal of photovoltaic. She has

successfully developed many techniques to eliminate defects in the commercial solar cell, making solar cells stable upon installation in the field. These outstanding results have led her to receive two invited journals to directly publish her work in the IEEE Journal of Photovoltaics (IEEE-JPV) and Solar Energy Material & Solar Cells (Solmat) Journal Elsevier, the top journals in the photovoltaic field. She has also been invited as a key-note speaker at Silicon PV 2019 in Belgium, the world-leading conference in silicon-based solar cells and won the best abstract and paper awards.