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## UofL's renewable energy prize awarded to Martin Green for low-cost, high-efficiency silicon solar cells

*Nominations for 2025 Leigh Ann Conn Prize due by Dec. 31, 2024*

LOUISVILLE, Ky. – Martin Green, Scientia Professor and world-leading silicon cell pioneer at the University of New South Wales (UNSW) Sydney, Australia, has won the 2023 Leigh Ann Conn Prize for Renewable Energy from the University of Louisville. The prize recognizes outstanding renewable energy ideas and achievements with proven global impact.

Professor Green – often described as the “father of modern photovoltaics” – is recognized for his pioneering efforts and groundbreaking achievements in high conversion efficiency of silicon photovoltaic materials as well as leading the invention and development of the passivated emitter and rear contact (PERC) solar cell.



PERC technology improved the quality of both the top and rear surfaces of standard silicon solar cells, resulting in greater and more efficient generation. This allowed more electricity to be generated from sunlight, lowering costs and increasing the adoption of sustainable solar energy worldwide.

The technology breakthrough helped increase the conversion efficiency of standard solar cells by over 50% in relative terms from 16.5% in the early 1980s to 25% in the early 2000s. Through successive improvements to cell design and fabrication, Green and his team held the record for silicon cell efficiency for 30 of the past 40 years.

PERC currently dominates solar cell production worldwide. Together with Tunnel Oxide Passivated Contact (TOPCon) cells – first demonstrated by Green’s research group at UNSW – the cells account for more than 90% of solar cells manufactured in the world today at a sales value exceeding \$100 billion USD to date.

Development of this technology also resulted in the training of a generation of students who, with Green’s support, applied their acquired skills to establish solar cell manufacturing in Asia. These

achievements are unique globally in both the quantum of efficiency improvement and the share of manufacturing capacity.

Professor Green is thrilled to be awarded the Leigh Ann Conn Prize. “From the start of my career, I was determined to do something that would make a difference in the world. I am very proud that, through the efforts of my team and countless others, we now have low-cost solar as a means for reducing the impact of climate change while, at the same time, reducing the cost of energy generation, something not widely thought possible only a decade ago,” said Green.

UNSW’s acting Vice-Chancellor and President Professor George Williams congratulated Professor Green on winning the Prize.

“Martin is a brilliant engineer whose leadership and accomplishments have led to the creation and development of the world’s solar manufacturing industry. His life’s work benefits people around the globe every day and is arguably our biggest weapon to combat global warming and climate change. Everyone at UNSW is proud to celebrate this well-deserved honour with him,” Williams said.

In March 2024, Green will give a public lecture in Louisville about his winning work and achievements, trials and tribulations. He will receive the Conn Prize medal and \$50,000 award at a formal ceremony.

“Professor Martin Green is a true pioneer in the field of photovoltaics,” said University of Louisville President Kim Schatzel, who will confer the award. “His work in solar cell technology is of great importance worldwide, and it is an honor to bestow upon him the Leigh Ann Conn Prize.”

The UofL prize is named for the late daughter of Hank and Rebecca Conn, who were university alumni, supporters and the prize benefactors. Their vision to create a legacy in honor of Leigh Ann celebrates scientists with the fortitude, patience, and resiliency to endure renewable energy technology innovation and translation into the marketplace, where impact occurs.

Nominations for the 2025 Leigh Ann Conn Prize competition close Dec. 31, 2024. Criteria and instructions are found at <http://leighannconnprize.org/>. For more information, contact Andrew Marsh at 502-852-8597 or [LeighAnnConnPrize@louisville.edu](mailto:LeighAnnConnPrize@louisville.edu).

*Photo caption: Martin Green, Scientia Professor at UNSW in Sydney, Australia, is the winner of the 2023 Leigh Ann Conn Prize for Renewable Energy from the University of Louisville. Photo by Anna Kucera.*

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