



The Right Livelihood Award

for outstanding vision and work on behalf of our planet and its people

Martin Green (Australia)

Honorary Award (2002)



...for his dedication and outstanding success in the harnessing of solar energy, key technological challenge of our age.

Martin Green

Martin Green was born in Brisbane in 1948 and studied at the University of Queensland and McMaster University in Canada. He specialised in solar photovoltaics (PV). In 2009, Green is a Scientia Professor at the University of New South Wales (UNSW), Sydney, Australia, and Executive Research Director of the University's Photovoltaics Centre of Excellence. He is also Research Director of Sydney-based CSG Solar Pty. Ltd., a company established specifically to commercialise the University's polycrystalline silicon thin-film on glass solar cell technology. Professor Green is a Fellow of the Australian Academy of Science, the Australian Academy of Technological Science and Engineering and the Institute of Electrical and Electronic Engineers (IEEE). He is the author of four books on solar cells, several book chapters, numerous reports and papers in international refereed journals in the area of semiconductor properties, microelectronics and solar cells.

The Photovoltaics Centre of Excellence at the University of New South Wales has been a world leader in the development of solar cell technology since the early 1980s. In 1983, the Centre set a new world efficiency record for a silicon solar cell of 18%. For the first time, a silicon solar cell was able to convert 18% of the light energy falling onto its surface directly into electrical energy. Since then, the Centre has continued to improve on this record, taking it past 20% in 1985, 24% in 1994 and 25% in 2008. Along the way, the Centre has set numerous efficiency records for concentrator cells, polycrystalline cells and solar modules, as well as making significant contributions to the development of low- cost solar cell technology. The Centre's 'first generation' solar technology was licensed to BP Solar in 1985, since when its costs have reduced to a third and it has resulted in over AUD \$1 billion in sales. Green's 'second generation' technology, based on thin silicon films deposited on glass, went into large-scale manufacture in 2006, offering the prospects of much cheaper solar electricity in the future. This technology, unlike some others, requires no toxic or rare materials.

Major international awards to Green include the IEEE William R. Cherry Award in 1990, the 1995 IEEE J.J.Ebers Award and the 1999 Australia Prize, which Green shared with his colleague and

former student, Professor Stuart Wenham, for 'outstanding achievements in energy science and technology'. The citation read: "Before Professor Martin Green and Professor Stuart Wenham's ground-breaking work on solar cells in the 1980s, photovoltaic technology had been in stagnation for more than 20 years with the world's best solar cells converting only 15 per cent of sunlight into electricity. This was thought to be highest efficiency that practical cells could achieve. Green and Wenham have invented or co-invented seven distinct cell technologies over the past 15 years. These solar cells have held the world efficiency record for converting sunlight into electricity for more than a decade and last year [1998] achieved an efficiency of 24.5 per cent, the current world record by a large margin." Since then, Green has received a number of other prestigious international awards, including the 2003 Karl W. Boer Solar Energy Medal of Merit, the 2004 World Technology Award for Energy, the 2007 Solarworld Einstein Award and the 2009 ENI Award for Renewable Energy. In 2010, he received an honorary degree of the McMaster University in Hamilton, Canada, and the CSIRO Eureka Prize for leadership in science in Sydney.

Green and Wenham's Buried Contact and related Solar Cells have dominated some of the major solar car races across the world over the past decade. The cells produce up to 30 per cent more energy than competing technologies, they are 20 per cent cheaper to produce, and during the 1990s became the largest manufactured solar cell technology in Europe. Their cells also powered the homes in the Athletes' Village for the Sydney 2000 Olympic Games.

Green's former students have played pivotal roles in establishing what have become the largest solar cell manufacturers worldwide.

Quotation

To me, the path to a sustainable energy future seems very obvious. We have to find a way to tap into a very small fraction of the sun's energy to convert it to a form suitable for supplying what are in fact the relatively small additional requirements of modern life. I think the technological challenge can be met. It remains to be seen whether the political and organisational challenges involved in recognising and addressing the need to change from the status quo can also be met on a reasonable timescale.

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