



**The Solar Energy Society
DAVID HALL
MEMORIAL LECTURE 2017**

**All-renewable electricity and rooftop solar
fuel are closer than you may think**

Keith Barnham

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With an introduction by

Dame Mary Archer, DBE

President, The Solar Energy Society
UK National Section of the International Solar Energy Society (UK-ISES)

Wednesday, 13 December 2017

6 – 9 pm

Small Lecture Theatre
University of Westminster Cavendish Campus
1st Floor
115 New Cavendish Street
London W1W 6UW

All-renewable electricity and rooftop solar fuel are closer than you may think

Keith Barnham

A secure, cheap and low carbon, all-renewable electricity supply and a non-polluting, solar powered replacement for petrol are both closer than many people think.

This talk, aimed at non-scientists and specialists alike, includes an animation of the revolutionary science behind a solar cell and a description of nature's extraordinary choreography of solar and wind power. We have the technology to enable wind turbines and solar panels to provide 80% of our electric power as long as they are backed up by around 15% of flexible bio-electricity and 5% of hydro and other storage. However, new technology is necessary if we are to end our dependence on fossil fuels for transport. The second part of the talk describes research into a novel roof-top solar panel containing an "artificial leaf" that can convert carbon dioxide from the air into a solar fuel. This artificially reproduces the process whereby plants use certain colours in sunlight to turn atmospheric carbon dioxide into the carbohydrates they need to grow. Recent progress researching the artificial leaf, solar cells and luminescent concentrators suggests that such a rooftop system could produce enough alcohol to power a fuel cell in an electric car for the average domestic mileage each year. "Free petrol for life" is closer than you may think.

*Keith Barnham started his research career in particle physics at the University of Birmingham, CERN and the University of California, Berkeley. Mid-career, at Imperial College London, he switched to researching solar power after spending a year at Philips Research Laboratories in Redhill. His Quantum Photovoltaic group at Imperial developed a novel concentrator solar cell based on quantum well technology and a novel luminescent concentrator using quantum dots. In commercial production the quantum well cell achieved three times the efficiency of today's rooftop panels. He is author of *The Burning Answer: a User's Guide to the Solar Revolution*, (Weidenfeld and Nicolson, 2015).*



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Located nearest to Goodge Street (Northern line), Great Portland Street (Metropolitan, Circle and Hammersmith & City lines) and Warren Street (Northern and Victoria lines). Several buses run along Tottenham Court Road and Euston Road, which is five minutes' walk away. The campus is a 15-20 minute walk from King's Cross, St. Pancras, Euston and Thameslink railway stations. Car parking is available for those with disabilities. There are also public car parks nearby.

Doors open at 6pm; Coffee will be served from 6 – 6.30pm; Lecture start time: 6.30pm
Canapé and Drinks Reception follows the lecture

REGISTRATION FORM

The Solar Energy Society David Hall Memorial Lecture 2017

Keith Barnham

All-renewable electricity and rooftop solar fuel are closer than you may think

Wednesday 13 December 2017, from 6pm, University of Westminster, Cavendish Campus

Please complete and detach the registration form and return to the Society's Secretariat together with your payment at the address overleaf.

IMPORTANT! Advance registration is essential

Please list all names of accompanying persons here:

Registration includes drinks and canapés reception following the lecture.

Full Name(s): _____

Address: _____

_____ Postcode: _____

Country: _____

Tel: _____ Fax: _____

E-mail: _____

All bookings must reach the Secretariat by Wednesday 6 Dec 2017

Category	Fee	Number of tickets
UK-ISES Member	£15.00 inc VAT	
Non-member	£20.00 inc VAT	
Concessionary member (retired, unwaged)	£10.00 inc VAT	
Student member	£5.00 inc VAT	
Concessionary non-member	£15.00 inc VAT	
Total payment:		

Method of Payment of Registration Fee

N.B. An additional charge of £1.00 will be made for payment by credit card

1. Credit Card (Visa, MasterCard)	Number		Expiry Date	
	Name on card			
	Card Billing Address Postcode		3 Digit Security Code	
Card Type (please circle as appropriate)	Credit Card		Debit Card	

2. Cheque payable to 'The Solar Energy Society'

Signature:		Date:	
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