London • Wednesday 6 May • 6.30 p.m. • Prof. Mike Glazer

Crystal World

Crystals have been objects of mystery for millennia yet many are unaware that much solid material around us is made from crystals. The importance of crystals lies in their beauty and practical applications in today’s technology. This talk will follow historical developments that allowed scientists to describe the nature of crystals and show how the science has advanced over the last 100 years; from resolution of the simplest structures to modelling molecular crystals such as proteins and viruses.

Milton Keynes • Tuesday 12 May • 7.30 p.m. • Dr Mark Telling

Magic Bullets and Plastic Sponges

In the heart of the Oxfordshire countryside lies a neutron research laboratory that houses what The Guardian describes as, “one of the most extraordinary machines ever built” – a machine, however, that few even know exists! In this outreach presentation, Dr Telling invites the audience to peak behind the curtain and learn exactly what neutron research entails, how this tiny particle illuminates our atomic world and how he uses the method for his own biophysics-based research.

Berkshire • Monday 18 May • 7.30 p.m. • Garrod Musto

Euclidean Crop Circle Theorems

For abstract see Herts, Wednesday 25 March

London • Wednesday 20 May • 6.30 p.m. • Prof. Alan Davies

Faraday, Green and Maxwell

Michael Faraday and James Clerk Maxwell were the greatest British scientists of the early and late nineteenth century respectively. Faraday’s innovative idea of the electromagnetic field of force was crucial for Maxwell to produce his eponymous equations and predict light as a wave. We shall explore the work of Faraday and Maxwell and its profound influence on the way we live. We shall also explain where the work of the lesser-known George Green fits in.

Herts • Wednesday 27 May • 7.00 p.m. • Prof. Carolin Crawford

Small Bodies of the Solar System

2015 is a momentous year for the study of dwarf planets – the Dawn mission arrives at Ceres in the asteroid belt in February, and the New Horizons space probe will commence its flypast of Pluto and its moons in July. We shall discuss the smaller bodies of the Solar System.

Milton Keynes • Tuesday 9 June • 7.30 p.m. • Prof. Didier Queloz

Exoplanets and the Nature of Otherworlds

The discovery of exoplanets sparked a revolution in astronomy and captured our imagination. Today, about 1000 such objects have been found. We have learned that planets are common, and that their properties are much more diverse than originally predicted. Their nature remains mysterious. Our Solar System is just one solution of nature’s problem of making planets. This talk will present the main results of exoplanet work, with the prospects for characterising the structure and atmosphere of exoplanets.

Information

All our lectures are free to all and last about one hour. There is usually 10–15 minutes afterwards for the audience to ask questions. School parties are most welcome but please register numbers beforehand with the relevant venue organiser (see below). All venues are wheelchair accessible. Details herein are subject to possible alteration – check branch webpages. Any views expressed in here are not necessarily those of the Institute of Physics.

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Lecture venue information and times

London

Lectures usually held at 6.30 p.m., Franklin Room, Institute of Physics HQ, 80 Portland Place, London W1B 1NT (unless otherwise stated). Refreshments are served from 6.00 p.m. on the day of the lecture. Please register online to attend lectures. If you do not have access to e-mail, telephone/text Alex on 020 8845 2295.

Berkshire

Lectures held at 7.30 p.m. in the William Penney Theatre, Recreational Society, West Gate, AWE, Aldermaston. Reading RG7 4PR. The theatre entrance can be found on the A340 Basingstoke to Newbury road, just before the Heath End roundabout at Tadley. Do not use the main gate entrance; the correct gate is signposted as the West Gate or AWE Staff + Deliveries (picture of a lorry). E-mail iop.lectures@awe.co.uk for further information.

Herts

Lectures usually held in the Lindop Building, University of Hertfordshire, College Lane, Hatfield AL10 9AB. For further information on this season’s events, contact Diane Crann, e-mail d.crann@herts.ac.uk, tel 07770 444614.

Kent

Unless stated otherwise, lectures held at 7.30 p.m. in Darwin Lecture Theatre 1, University of Kent, Canterbury CT2 7NZ. Further information can be obtained from Dr Cyril Isenberg, e-mail c.isenberg@kent.ac.uk, tel 01227 823768.

Milton Keynes

Lectures held at 7.30 p.m. in the Berrill Lecture Theatre, Open University, Walton Hall, Milton Keynes MK7 6AA. For further information contact Prof. Ray Mackintosh, e-mail raymond.mackintosh@open.ac.uk.
**January 2015**

**London**
- **Wednesday 21 January** • 6.30 p.m. • **Prof. Paul McMillan**
  - Vulcan’s Forge and Hades’ Kingdom: Chemistry and Biology Under Extreme Conditions
  - Most chemistry is based on experiments at near ambient conditions. However, most matter in the universe is under conditions of extremely high pressure. Prof. McMillan will explore the chemistry and biological survival in Vulcan’s forge, and in Hades’ kingdom.

**Herts**
- **Wednesday 28 January** • 7.00 p.m. • **Dr Hannah Fry**
  - Hidden Connections
  - In this talk, Dr Fry will take you on a whistle-stop tour of the hidden connections in our human world. Showing how the patterns uncovered in Facebook are helping us understand the human brain, how understanding the structure of the internet is helping to fight terrorism, and even how the maths of connections proves that sometimes it pays to gossip.

**February 2015**

**Kent**
- **Tuesday 3 February** • 7.30 p.m. • **Dr Frances Saunders**
  - The Challenge of Translating Research into Economic Impact
  - Everyone knows that the UK leads the world in research. Successive governments have looked at how to translate this extraordinary wealth into financial wealth by creating new business or making existing business more competitive. Dr Saunders hopes to stimulate debate about why translational research is important and how to make sure that great science does not just sit on the shelf, waiting for others to lift it off and gain benefits that should be ours.

**Herts**
- **Wednesday 4 February** • 6.30 p.m. • **Dr Susanne Schwenzer**
  - Curiosity at Gale Crater, Mars
  - The Mars Science Laboratory Rover Curiosity has been exploring Gale Crater on Mars since 6 August 2012. On its journey from Bradbury Landing to Mt Sharp it has found conglomerates and mudstones, clay minerals and sulfates. The talk will investigate what these findings mean for the habitability of the site.

**March 2015**

**Kent**
- **Tuesday 17 February** • 7.30 p.m. • **Prof. Mohamed Sobhy**
  - The Influence of Science, Technology and Photography on Art
  - Developments in science and technology have always influenced art. From mathematics, artists learned about perspective; chemical processing gave affordable colours, previously not seen. Newton and Goethe’s work on vision helped artists understand colour. Turner and Mondrian applied Goethe’s theories. Psychologists raised awareness of colour constancy and adaptation, while photography showed stages of movements not perceived by the eye, as seen in works by Duchamp and Picasso. Science and technology can itself be subjects of art, be it in the laboratory or workshop. Prof. Sobhy will explain these ideas through examples of artwork from medieval to present time.

**London**
- **Wednesday 18 February** • 6.30 p.m. • **Felix Flicker**
  - From Smoke Rings to Cosmic Strings: The Physics of Knots
  - For abstract see Milton Keynes, Tuesday 10 February

**Herts**
- **Wednesday 25 February** • 7.00 p.m. • **Collin Howard**
  - Some Lessons from Buncefield
  - The Buncefield Explosion, reportedly the largest peacetime explosion in Europe, has been the subject of a series of investigations, research studies, joint work by regulators and industry, civil and criminal court cases. This presentation explores some of the lessons and their wider future impact.

**April 2015**

**London**
- **Wednesday 1 April** • 6.30 p.m. • **Martin Kellett**
  - Will It Fly? A Guided Tour of Aircraft Stability
  - How do engineers know whether an aircraft will be stable or not, even before it flies? Martin Kellett will explain this.

**Berkshire**
- **Monday 30 March** • 7.30 p.m. • **Dr Caroline Shenton-Taylor**
  - Physicist, Explorer and Inventor: Dizzying Highs and Crushing Lows
  - For abstract see Berkshire, Monday 30 March

**London**
- **Wednesday 22 April** • 6.30 p.m. • **Dr Michaela Musilova**
  - Physicist, Explorer and Inventor: Dizzying Highs and Crushing Lows
  - For abstract see Berkshire, Monday 30 March

**Milton Keynes**
- **Tuesday 21 April** • 7.30 p.m. • **Dr Caroline Shenton-Taylor**
  - Physicist, Explorer and Inventor: Dizzying Highs and Crushing Lows
  - For abstract see London, Wednesday 18 March

**London**
- **Wednesday 22 April** • 6.30 p.m. • **Dr Michaela Musilova**
  - Living in the Extremes: the Quest of an Astrobiologist
  - Where do we come from? What is our future on Earth and beyond? Are we alone in the universe? For the first time since these questions were posed thousands of years ago, they may now be answered. Astrobiology is a multidisciplinary science encompassing astronomy, biology, chemistry, geology and engineering. Dr Musilova will explain how these disciplines are used to understand the origin, evolution and the future of life in the universe through her experiences at NASA, as an analogue astronaut and surviving extreme expeditions.

**All free, all welcome! Please join our Facebook group [www.facebook.com/ioplse](http://www.facebook.com/ioplse)**