Oxford University Scientific Society — Hilary Term 2015

‘SciSoc Social at Thirsty Meeples’

SciSoc Social — Wednesday, 21st January 2015 from approximately 1900 to 2200 at Thirsty Meeples

Abstract:
This Hilary, we will be kicking of the term with our old all-time favourite — **SciSoc social at Thirsty Meeples!** The social will take place on Wednesday, 21 January 2015, from approximately 1900 to 2200.

About the Place:
If you have not already heard of/been to the wonderful establishment that is **Thirsty Meeples** (shame on you if you really don't), here's some info: is hands-down THE most fun place for some geeky board games fun in Oxford, with popular titles including Cards Against Humanity, Coup, Pandemic up for your enjoyment for only a £4.50 cover charge (plus a little bit more for their awesome carrot cake)!

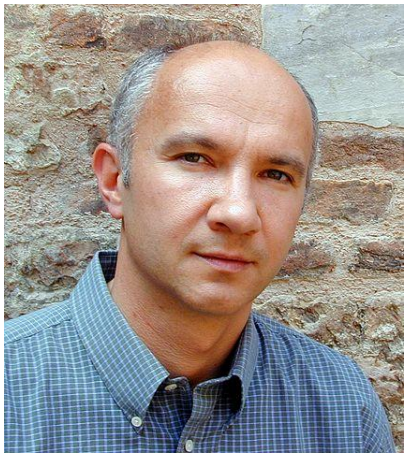
Thirsty Meeples *is* a fairly small place however, so will anyone who is interested in coming for this please RSVP through the link above latest by 23:59 on Monday 19th Jan? That way we will know how many places to reserve at the cafe, and in the event that there is too much interest source for an alternative venue which can house us all instead!

See you all!

P.S. Don't worry if you're not a subscribing member of our society — all are welcome! (and we're not making any money out of this! you pay your cover cost and food/drink expenses directly to the cafe!)

‘The Ultimate Physical Limits of Privacy’

Professor Artur Ekert — Wednesday, 28th January 2015 at 8.15pm in the Inorganic Chemistry Lecture Theatre on South Parks Road

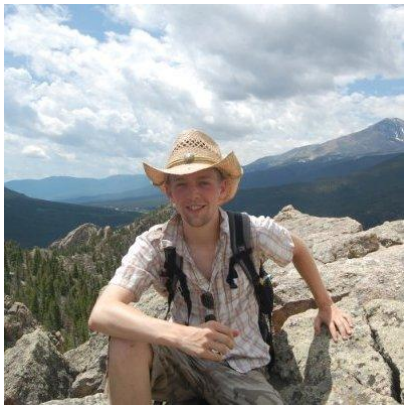


Abstract:
Among those who make a living from the science of secrecy, worry and paranoia are just signs of professionalism. Can we protect our secrets against those who wield superior technological powers? Can we trust those who provide us with tools for protection? Can we even trust ourselves, our own freedom of choice? Recent developments in quantum cryptography show that some of these questions can be addressed and discussed in precise and operational terms, suggesting that privacy is indeed possible under surprisingly weak assumptions.

About the Speaker:
Artur Ekert is the Professor of Quantum Physics at the Mathematical Institute, University of Oxford, U.K. He is also Lee Kong Chian Centennial Professor and Director, Centre of Quantum Technologies at the National University of Singapore. He is one of the pioneers of quantum cryptography. In his doctoral thesis (Oxford, 1991) he showed how quantum entanglement and non-locality can be used to distribute cryptographic keys with perfect security. He has worked, communicated and advised several companies and government agencies. His current research extends over most aspects of information processing in quantum-mechanical systems and the nature of randomness. He is a recipient of several awards, including the 1995 Maxwell Medal and Prize by the Institute of Physics and the 2007 Royal Society Hughes Medal. In his non-academic life he is an avid bush pilot and scuba diver.

'What lies beneath — exploring our deep seas and understanding the hazards'

Michael Clare — Wednesday, 4th February 2015 at 8.15pm in the Inorganic Chemistry Lecture Theatre on South Parks Road



Abstract:
Incredibly, we know less about the deep seafloor on Earth than we do about the surface of Mars. Recent deep sea exploration has revealed enormous underwater landslides that caused tsunamis and has provided evidence of large volume sediment flows that travelled over hundreds of kilometres at such speeds that they broke important communications cables. Advanced and robust technology is needed to explore the deep seas and some insights will be provided into how this is possible, with some fascinating images of just how alien the ocean floor can appear.

About the Speaker:
Mike Clare is a Senior Engineering Geologist at Fugro Geoconsulting Limited and a Researcher at the National Oceanography Centre.

'Dinner with Professor Marcus du Sautoy, Patron of the Oxford University Scientific Society'

Dinner with Our Patron — Wednesday, 18th February 2015 at 6pm at Brown's Restaurant on Woodstock Road

Photo courtesy Wikipedia

Abstract:
We will be dining with Professor du Sautoy at **Browns Restaurant**, Woodstock Road at 6.00pm. If you are interested in attending the dinner, please get in touch with our President, Leon Kong, by writing to him at**wei.kong@queens.ox.ac.uk** so that we may reserve a seat for you!

About the Speaker:
Professor Marcus du Sautoy, OBE, is the Charles Simonyi Professor for the Public Understanding of Science and a Professor of Mathematics at the University of Oxford. Professor du Sautoy is well-known for his work in popularizing mathematics, particularly through his BBC documentary The Language of the Universe as well as his Radio 4 features and TED talks. Professor du Sautoy is currently running "Naming Symmetries for Charity", which raises funds for the support and empowerment of underprivileged Guatemalan children and their families by letting donors name hyperspace symmetrical objects discovered by Professor du Sautoy.

'The Origin of the Moon'

Professor Alex Halliday FRS — Thursday, 26th February 2015 at 8.15pm in the Inorganic Chemistry Lecture Theatre on South Parks Road

Abstract:
Where does the Moon come from? Although humans first walked on the Moon over four decades ago, we still know surprisingly little about the lunar body's origin. Samples returned by the Apollo missions have somewhat confounded scientists' ideas about how the Moon was formed. Its presence is thought to be due to another planet colliding with the early Earth, causing an extraordinary giant impact, and in the process, forming the Moon. But, analysing chemicals in Apollo's rock samples has revealed that the Moon could be much more similar to Earth itself than any potential impactor. Professor Alex Halliday discusses the most up-to-date theories and evidence on this topic.

About the Speaker:
Professor Alex Halliday, FRS, has been Head of the Mathematical, Physical and Life Sciences Division at Oxford University since October 2007. Before coming to Oxford, he spent twelve years as a professor at the University of Michigan, Ann Arbor, USA, and then six years in Switzerland as Head of the Department of Earth Sciences at the ETH in Zurich. In 2004 he took up the Chair of Geochemistry at Oxford, where his research involves using isotopic methods to study Earth and planetary processes and has resulted in over 300 articles in scientific journals, including many in Science and Nature. Professor Halliday is a former President of the American Geochemical Society and of the European Association for Geochemistry. He has experience with a range of top science boards and advisory panels currently including those of the Natural Environment Research Council; the Natural History Museum, London; the Max Planck Institute for Chemistry, Mainz; and the American Geophysical Union. He was also a member of sub-panel 17 of the 2008 Research Assessment Exercise (RAE). An enthusiast for technological innovation, most of Professor Halliday's recent research is in developing and using mass spectrometry to shed light on the origin and early development of the solar system and recent earth processes, such as continental erosion and climate. However, he is also engaged in other studies, from the mechanisms of volcanic eruptions to the formation of mineral and

hydrocarbon deposits to the development of civilisation. Professor Halliday's scientific accomplishments have been recognised with awards including the Murchison Medal of the Geological Society and the Bowen Award of the American Geophysical Union. He was elected Vice-President and Physical Secretary of the Royal Society in 2014.

'Old Solvents: New Solutions?'

Professor Sir Martyn Poliakoff CBE FRS — Wednesday, 4th March 2015 at 8.15pm in the Inorganic Chemistry Lecture Theatre on South Parks Road

Photo courtesy Wikipedia

Abstract:
My research interest is in Green Chemistry — cleaner ways of making chemicals and materials, and in particular, in the use of environmentally more acceptable solvents. I am also interested in devising processes in continuous flow systems. The lecture will describe some of our latest results, mostly unpublished, which demonstrate that one can derive really quite valuable advantages by carrying out reactions in simple solvents such as ethanol and water. It should be understandable (and entertaining!) for chemists at all levels from first year undergraduate upwards, or really students from any scientific field at all!

About the Speaker:
Professor Sir Martyn Poliakoff, CBE FRS, is the Foreign Secretary and a Vice-President of the Royal Society, a YouTube superstar, Professor of Chemistry at the University of Nottingham, and an Honorary Professor of Chemistry at Moscow State University in Russia. Martyn's most notable contribution to international science is the fostering of research links between the United Kingdom and Ethiopia, particularly in the field of green chemistry. However, Martyn's worldwide fame perhaps comes from his production of The Periodic Table of Videos, a series of short videos about each of the elements in the Periodic Table of Elements which has inspired viewers worldwide to take up a keener interest in chemistry and science. Martyn's research interests involve the development of novel photochemical methods for the synthesis of antimalarial drugs.

'Light, clocks and sleep: keeping an eye on the time'

Professor Russell Foster CBE FRS — Wednesday, 11th March 2015 at 8.15pm in theInorganic Chemistry Lecture Theatre on South Parks Road

Abstract:
We and most organisms possess a 24h biological (circadian) clock which acts to 'fine-tune' physiology and behaviour to the varying demands of the day/night cycle. Such a clock is only useful if biological time remains synchronised to solar time, and the daily change in the gross amount of light (irradiance) at dawn or dusk provides the most reliable indicator of the time of day. In mammals the "master clock" is located within small paired nuclei at the base of the brain called the suprachiasmatic nuclei (SCN). The SCN receive direct retinal projections which adjust the clock to the light/dark cycle, and eye loss in mammals blocks this completely. But how does the eye detect this light to provide the re-setting signal? Surprisingly, we found that visually blind mice, with genetic defects in the rods and cones, could still use their eyes to regulate the circadian system. These, and a host of subsequent experiments including studies in humans with genetic defects of the eye, showed that the processing of light information by the circadian and classical visual systems is different and that the mammalian eye

contains an additional non-rod, non-cone photoreceptor based upon a small number of photosensitive retinal ganglion cells (pRGCs). These remarkable, and recently discovered receptors use “melanopsin” as their photopigment, which is sensitive in the blue part of the spectrum around 480nm. This presentation will explore the discovery, biology and clinical importance of this third photoreceptor system of the eye.

About the Speaker:
Russell Foster is Professor of Circadian Neuroscience and the Head of Department of Ophthalmology. He is also a Nicholas Kurti Senior Fellow at Brasenose College. Prior to this, Russell was at Imperial College where Russell was Chair of Molecular Neuroscience within the Faculty of Medicine. Russell Fosterâ€™s research spans basic and applied circadian and photoreceptor biology.

He received his education at the University of Bristol under the supervision of Professor Sir Brian Follett. from 1988–1995 he was a member of the National Science Foundation Center for Biological Rhythms at the University of Virginia and worked closely with Michael Menaker. In 1995 he returned to the UK and established his group at Imperial College. For his discovery of non-rod, non-cone ocular photoreceptors he has been awarded the Honma prize (Japan), Cogan award (USA), and Zoological Society Scientific & Edride-Green Medals (UK). He is the co-author of *Rhythms of Life*, a popular science book on circadian rhythms.

P.S.: **Check out Professor Foster's TED talk!**

Committee Elections for Next Term

Committee Elections for Trinity term will be held immediately after Professor Foster's talk on Wednesday of Eighth Week. If you are interested in running for a position, do come to the meeting to tell us what you are interested in doing for SciSoc! Experience a fulfilling career at the Oxford University Scientific Society by self-nominating for one of the positions below if you're interested:

1. Vice-President: arranges event/speaker line-up for Michaelmas 2015; automatically is promoted to President in Michaelmas 2015.
2. Secretary: the general manager of the Society, oversees administrative affairs as well as all formal internal and external communications.
3. Membership Director: maintains the membership database and manages new sign-ups, including online (PayPal) sign-ups.
4. Publicity Director: oversees and arranges for publicity operations to improve brand- and event-visibility through various forms of media as well as personal-level engagement.
5. Sponsorship & Corporate Relations Director: maximizes the Society's sponsorship income by sourcing for and managing sponsors at various levels.
6. Events Director: manages event logistics, including but not limited to the procurement of refreshments and the booking of required venues.
7. A/V Director: oversees the video-recording of talks and other events and works with the Publicity Director to use said video recordings as publicity material for the Society.
8. IT Director: manages and upgrades where necessary the IT infrastructure of the Society, including but not limited to the Society Website.

Our society operates on a free-and-easy basis as far as formalism is concerned, so if you've thought of a role which you think would be good for the Society to have and/or is something you wish to pursue alongside our team, feel free to suggest to us some new officer positions! In any case, please e-mail all nominations and enquiries to the current President, Leon Kong, at **wei.kong@queens.ox.ac.uk**.

We hope to see you on Wednesday!