

Bristol Scientific Club: Meetings 2011-2012

(1) Friday, 14 October 2011

Geoffrey Eglinton: "Leaf Waxes: Nature's Ultimate Waterproofing"

"All higher plants have a thin, waxy coated cuticle which covers their leaves, petals and stems and controls the vital water balance of the plant. This layer is in the front line of the evolutionary war between plant and environment – atmosphere, sunlight, weather, bacteria, fungi, animals and other plants. The chemistry and physics of these layers, right down to the ultra-microscale, reveal extraordinary solutions to these problems which have been arrived at over the millennia. Some of these plant evolved solutions are now being exploited by material scientists for everyday uses, such as self-cleaning windows!

Turning to the basic sciences, one area of especial interest to palaeoclimatologists concerns the interpretation of the traces of plant waxes found in ancient lake and ocean sediments. Geoffrey will explain how these molecular records derived from sediments in the Eastern South Atlantic are being used to discover the huge vegetational changes that took place on the African continent during the last Glacial – Interglacial cycle."

(2) Saturday, 19 November 2011

Michael Hart: "21st C Synchrotron Light Sources"

"In the 1970s it was realised that synchrotrons and storage rings, then built only for experiments in High Energy Physics, were the brightest sources of continuous radiation on the planet.

Following „demonstration experiments by "invitation" " on those machines, the first purpose built storage rings, dedicated to the remainder of science and technology, came into operation around 1980. By the end of the first decade of the 21st C the source brightness had increased by a further factor of 10^{10} and dozens of Synchrotron Radiation Facilities around the world are operational from the hard x-ray region to the far infra-red. A full list can be found @ www.lightsources.org

During the 40 or so years, user operation and easy access has developed to the state where all of Science, Technology, and Engineering is represented in the portfolio and, perhaps more surprising, planetary scientists, agriculturists, archaeologists, ecologists, historians and art curators are also users of these facilities. A few examples of research chosen from DIAMOND and from around the world will be described".

(3) Friday, 9 March 2012

Balazs Gyorffy: "Spintronics"

The synopsis of this talk is not available at the present time – will follow, by email.

(4) Friday, 30 March 2012

Ron McEwen: "Unbelievable Science"

Some scientific claims are met with almost passionate belief or disbelief. A few familiar examples are briefly dealt with before going on to cases in which the speaker has had first hand involvement with the main players: private inventors, entrepreneurs, engineers and scientists of the former Soviet Union. Their circumstances and personalities are described and an attempt

made to discern reasons why normal standards of scientific objectivity sometimes give way to more emotional behavior.

It is hoped that this will stimulate contributions of experiences and opinions of the members.

(5) Saturday, 28 April 2012

Brian Vincent: "What is a tin of paint and why"

The contents of a tin of paint seem, to the average do-it-yourself buff, decorating their house or re-touching their car, to be innocuous, sticky material that gives the desired colour to the object being painted. Yet paint is one of the most highly engineered products in the field of chemical technology that is nowadays referred to as "soft materials". It is a complex mixture of colloidal particles, polymers and various specialist additives (preservatives, perfumes, biocides, film-forming promoters, gelling agents, etc, etc), all dispersed in a solvent, increasingly (for environmental reasons) water. One important design feature is that paint has to flow easily during application (e.g. with a brush or a roller), but should not sag or drip after application. The former ICI company (now Akzo-Nobel) has a large research division based at Slough, devoted to improving paint technology. I was a research scientist at that company for several years in the early 1970's, and have had ongoing research collaborations with them since moving to Bristol. In this talk I will attempt to unravel some of the science behind this intriguing commodity.

(6) Saturday, 19 May 2012

Priscilla Heard: "Seeing through illusions - Experiments carried out with Richard Gregory"

The synopsis of this talk is not available at the present time – will follow, by email.