

IIS NEWS

The venue for the Spring Meeting of the INTERNATIONAL ISOTOPE SOCIETY - UK GROUP was the delightful Conference Park at the University of Warwick and held on 12 April 1991. A pre-meeting dinner involving the Organising Committee, Speakers and Guests was held the evening of the 11 April at the University where it was resolved to make the Spring Meeting of the IIS-UK Group an annual event.

The scientific theme for this highly successful meeting was **Isotopes in Biological Systems** which was attended by over 90 participants with 15 Commercial Organisations exhibiting their information and products.

Commercial sponsors and exhibitors provided much useful interesting literature and demonstration of new equipment. The organisations present were Amersham International plc, Berthold UK Ltd., DuPont (UK) Ltd., Europa Scientific, ICI Cambridge Research Biochemicals, ICN Biomedicals Ltd., John Wiley & Sons Ltd., K & K Greef Ltd., Lablogic, Molecular Dynamics, NE Technology, Raytek Scientific, Saxon Micro, Scotlab Ltd., Shell Research Ltd., and Sigma Radioisotopes.

The meeting was opened by Professor David Crout of the Department of Chemistry at the host University and previously a speaker at the IIS - UK Group meeting in April last year. He welcomed the IIS-UK Group members to "Mrs Thatcher's favourite campus" wishing everyone an enjoyable and successful meeting. Dr Don Morecombe of Smith Kline Beecham and Chairman of the IIS-UK Scientific Committee outlined the purpose of the theme chosen for this meeting as filling the gaps with more specific applications of isotopes thus complementing the broader topics as presented at the meeting held at the University of Surrey in April 1990 (see *Journal of Labelled Compounds and Radiopharmaceuticals* 28(1990) 985-987). Dr Morecombe chaired the morning sessions of the meeting.

Dr Dave Halliday (MRC Clinical Research Centre, Harrow) reviewed recent studies using stable isotopically labelled compounds (^{13}C , ^2H , ^{18}O and ^{15}N) for various tests such as for *Helicobacter pylori* using a [^{13}C]urea test, deuterated water for body water and outlining the value of double isotope studies exemplified by the study of whole body protein turnover using leucine labelled with ^{13}C (carboxyl) and with ^{15}N (amino group) and measuring [1- ^{13}C]alpha-ketoisocaproic acid.

Dr Keith Harding (Dudley Road Hospital, Birmingham) current chairman of the British Nuclear Medicine Society outlined first the benefits of nuclear medicine over some conventional alternatives in that *in vivo* uses do not involve any anaesthetics, mainly outpatients and no tunnel equipment. Main radionuclide used is [$^{99\text{m}}\text{Tc}$]technetium with its 6 hour half-life and produced from a $^{99}\text{Mo}/^{99\text{m}}\text{Tc}$ generator. He reviewed some of the uses of technetium-99m labelled ligands for imaging the brain, kidney, heart and other important radionuclides such as thallium-201 for heart imaging. Use of [^{67}Ga]gallium for soft tumours and imaging inflammation with [^{111}In]indium oxine and [$^{99\text{m}}\text{Tc}$]HMPAO. [$^{81\text{m}}\text{Kr}$]Krypton is now preferred to [^{133}Xe]xenon for lung ventilation studies. Current developments include antibodies labelled with Tc-99m for tumour location/imaging. Isotopes of interest in medical therapy include ^{131}I , ^{32}P , ^{90}Y and ^{89}Sr and especially pain palliation in prostate cancers and bone by the use of [^{89}Sr]strontium chloride.

Dr David Swift (MAFF, Lowestoft) discussed isotopes in the marine food chain and how these get into the environment. A fascinating study of the uptake by marine life forms of various isotopes discharged into the sea from nuclear facilities. He showed how the forms in which the isotopes are released into the environment dictate their uptake and metabolic pathway. Critical groups of people are looked at such as fishermen and their families. He showed that effluent containing beta emitters and alpha emitters have been reduced by more than an order of magnitude from Selafield through improvement to plant. Bioaccumulation experiments are usually done in the laboratory. This was a fascinating talk to end the morning session.

Dr Jeff Troke (from Hoechst UK and chairman of the Royal Society of Chemistry Radiochemicals Group) chaired the afternoon session by first complimenting the Organisers for their choice of venue and secondly suggesting that perhaps a joint meeting of the IIS-UK Group and the RSC Radiochemicals Group could be considered and arranged in the future.

Dr John Leahey (ICI Agrochemicals) presented a fascinating talk on the use of isotopes in the assessment of the safety of agrochemicals involving the uses of labelled compounds (primarily with carbon-14) in residue studies of herbicides and insecticide agricultural chemicals. The complexity of the ecology of the environment made such studies both vital and difficult. Simulation of some data is now obtained by cut stem studies in radioactive solutions in the laboratory. Use of plant tissue cultures is also a developing technique for such studies. Invariably not only the labelled agrochemical needs study but also labelled metabolites and/or compounds produced under the environmental field conditions.

Dr John Wharton (Royal Postgraduate Medical School, Hammersmith, London) presented a review of the autoradiographic techniques used in receptor localisation *in vitro*. He pointed out that the availability of specialised films and emulsions, and reference standards based on labelled polymers, had improved the signal to background. This has resulted in greater sensitivity of detection and better quantitation of the experimental data.

The final technical session of the meeting was an excellent account of a new technology - scintillation proximity assays (SPA) and applications in biological systems presented by Dr Pat Towers (Amersham International plc, Cardiff Laboratories). He showed how SPA can be used in the determination of numerous analytes and is automatable, does not require any liquid scintillants, and instrumentation now available enables at least 6 samples to be measured simultaneously thus overcoming some basic problems encountered in conventional RIA. The technology is based on the use of fluormicrospheres which incorporate scintillation fluors in beads of polystyrene for example, or use of an inorganic scintillator such as yttrium silicate. Such microspheres can be coated with receptor protein molecules which competitively bind tritium or [¹²⁵I]iodine labelled or unlabelled analyte. Measurement in a beta counter (LKB) counts only bound analyte which is in close proximity to the scintillant fluor. Radioactive materials in solutions are not counted under these conditions thus enabling a measurement of bound and free to be achieved. The technique is being extended to enzyme assays whereby substrates react to displace labelled groups attached to the enzymes which are bound to the fluormicrospheres thus causing a reduction in the measurement of radioactivity.

The meeting was closed by Dr Derek Sutherland, Chairman of the IIS-UK Group who expressed sincere thanks on the part of all the participants to the Session Chairmen and speakers for excellent presentations and to all the sponsors for their support. He stated that plans were already in progress for the Spring (April) 1992 meeting which is being arranged at the University of Surrey, Guildford. The primary theme for this meeting will be Tritium NMR Spectroscopy and its Applications.

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