Sunday, 13 July

11.00 – 18.30 Registration, Cairns Convention Centre Mezzanine Level

18.30 Workshop on Multifrequency EPR: Applications to Complex Systems

Session 1: Chair John Pilbrow

12.30 Graeme R. Hanson
Introduction

12.40 Graeme R. Hanson
High Resolution Multifrequency EPR Spectroscopy: A Toolbox for the Molecular Characterisation of Materials

13.10 Hitoshi Ohta
High Field ESR Spectroscopy using a Pulsed Magnetic Field: Applications to the Material Sciences

13.40 Seigo Yamauchi
Characterization of the Electronic Excited States by Means of Various EPR Techniques

14.10 Jimmy Feix
Methods and Applications of Site-directed Spin Labeling EPR Spectroscopy

14.40 Wolfgang Lubitz
Modern EPR Techniques applied to Metalloenzymes: Hydrogenase as an Example

15.10 Afternoon Tea

Workshop on Multifrequency EPR: Applications to Complex Systems

Session 2: Chair Graeme Hanson

15.30 Michael Davies
Principles and Practice of EPR Spin Trapping in Biological Systems

16.00 Valery Khramtsov
EPR Measurement of Glutathione Redox State

16.30 Howard Halpern
What We Learn from in vivo EPR Images

17.00 Patrick Carl
Instrumental Aspects in Multifrequency and Multiresonance EPR

17.30 Workshop - Close

18.30 Graeme Hanson: Welcome to Cairns

19.00 Plenary Lecture: Graham Smith

19.45 The HIPER Project: Nanosecond Pulse EPR at 94GHz

20.00 Welcome Reception
Monday, 14 July - Morning

8.30  **Formal Conference Opening Ceremony**: *Chair Graeme Hanson*
Hitoshi Ohta - President APES: Introductory Remarks and Welcome
Wolfgang Lubitz – President IES: Introductory Remarks and Welcome
John Pilbrow and Michael Davies: Introductory Remarks and Welcome

**Session: Unravelling Photosynthesis – Our Future Energy Source?**
*Chair: Graeme Hanson*

9.00  **Plenary Lecture**: Wolfgang Lubitz
Advanced EPR and ENDOR Studies to Probe Structure and Function of the Water Splitting Cluster in Oxygenic Photosynthesis

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<tr>
<th>Time</th>
<th>Speaker</th>
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<tbody>
<tr>
<td>9.45</td>
<td>Asako Kawamori</td>
<td>g-Anisotropy of the S2-state Manganese Cluster in Cyanobacterial Photosystem II derived by W-band Electron Paramagnetic Resonance</td>
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<tr>
<td>9.45</td>
<td>Victor Krinichnyi</td>
<td>High-Field Saturation Transfer EPR in Conducting Polymers</td>
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10.10  Morning Tea

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<tr>
<td>10.40</td>
<td>Anjana Jajoo</td>
<td>Heat-induced Changes in the EPR Signal of Tyrosine D (YDOX)</td>
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<td>10.40</td>
<td>Albert Ziatdinov</td>
<td>Conduction Electron Spin Resonance: As a Tool for Studying the Physical and Chemical Processes in Graphite Intercalation Compounds</td>
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11.15  Ron Pace
ESEEM and Computational Chemistry Studies of Ligand Interactions in the Water Oxidising Mn Cluster of Photosystem II

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<tr>
<td>11.15</td>
<td>Shun-ichiro Watanabe</td>
<td>ESR Observations of Ambipolar Charge Carriers in MIS Devices of Regioregular Poly(3-hexylthiophene) / PCBM Composite</td>
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<tr>
<td>11.40</td>
<td>Tanaka, Hiroshi</td>
<td>ESR Observations of Field-induced Polaron in Regioregular Poly(3-hexylthiophene) Field-effect Transistors</td>
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11.40  Hiroyuki Mino
Pulsed EPR Study of the Light-induced Radicals in a Blue Light Sensor Protein TePixD

12.05  Haruhiko Yashiro
Multi-frequency and High-field EPR Study of a Metalloprotein with a Silent Spin

12.05  Tran Trung
On the Existing States of the Charge Carriers in a Conducting Polymer Matrix

12.30  Lunch
### Monday, 14 July - Afternoon

**Session: High Field EPR Spectroscopy**  
*Chair: Graham Smith*

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<tbody>
<tr>
<td>13.30</td>
<td>Alex Smirnov</td>
<td>Cryogenics Lecture: Big and Small Magnets for Tiny Samples: High Field EPR Instrumentation and Applications to Studying Nanomaterials</td>
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**Parallel Session 1: High Field EPR Spectroscopy Chair: Graham Smith**

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<td>Eduard Reijerse</td>
<td>A Quasi-optic High Frequency Pulsed / CW EPR Spectrometer Operating at 122 and 244 GHz</td>
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<td>14.50</td>
<td>Masayuki Hagiwara</td>
<td>High-Field and Multi-Frequency ESR Studies at KYOKUGEN in Osaka University</td>
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<td>15.15</td>
<td>Yugo Oshima</td>
<td>High-Field ESR on Molecular-based Nanomagnets: Application to Polyhedron Clusters and Rare-earth Compounds</td>
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<td>15.40</td>
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<td>Afternoon Tea</td>
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**Parallel Session 2: EPR Applications in Biological Inorganic Chemistry Chair: Boris Martinac**

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<tr>
<td>14.15</td>
<td>Hong-In Lee</td>
<td>Advanced Electron Paramagnetic Resonance Study of Substrate/Inhibitor-Binding to FeMo-Cofactor of Nitrogenase MoFe Protein</td>
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<tr>
<td>14.50</td>
<td>Graeme Hanson</td>
<td>Spectroscopic Studies of SoxAX Reveal Insights into the Catalytic Mechanism of SoxAX</td>
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<td>15.15</td>
<td>Gerhard Schenk</td>
<td>Snapshots of the Structure and Function of Two Binuclear Metallohydrolases: The Proofreading 3'-5' Exonuclease Subunit of Escherichia coli DNA Polymerase III</td>
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16.20 | Laila V. Mosina | High-frequency EPR of Chromium Ions in Synthetic Forsterite Co-Doped with Chromium and Lithium |

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<td>16.20</td>
<td>Betty Gaffney</td>
<td>Fatty Acid Location in the Large Cavity of Lipoxygenase</td>
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<td>16.55</td>
<td>Victor Ivanshin</td>
<td>Multi-frequency EPR of YbRh2Pb</td>
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<td>17.20</td>
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<td>To be announced.</td>
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18.00 | Asia Pacific EPR Council Meeting – Meeting Room 8 (Conference Organisers Room)  
Council Members Only.  
Free Evening |
**Tuesday, 15 July - Morning**

**Session: Biomedical Applications of EPR Spectroscopy**  
*Chair: Peter Lay*

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</table>
| 8.30  | Plenary Lecture:  | Valery Khramtsov  
Biomedical EPR Spectroscopy and Imaging of Nitroxyl and Trityl Radicals |
| 9.15  | Michael Davies    | Radical Transfer from Oxidised Heme Proteins to Myosin: Formation of Myosin Radicals and Protein Cross-Links |
| 9.50  | Lawrence Berliner | How Good are Nitrones for Measuring in vivo Redox Reactions in Biological Systems? |
| 10.25 | Morning Tea       |                                                                              |
| 10.55 | Wolfgang Trommer  | p-Nitrostilbene-t-butyl-nitrone, a Novel Fluorescent Spin Trap for the Detection of ROS with Subcellular Resolution |
| 11.30 | Dmitri Stass      | Potential Pitfalls in Building Radiation-Generated Three-Spin Systems Using Double-Function Fluorescent Spin Probes |
| 11.55 | Lu Jing Fen       | Study of Anti-oxidation of TCM-extracts with Spin Trapping-EPR *in vitro* |
| 12.20 | Lunch             |                                                                              |

**Parallel Session 1: Biomedical Applications of EPR Spectroscopy**  
*Chair: Peter Lay*

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**Parallel Session 2: Chemical Effects of Magnetic Fields**  
*Chair: John Pilbrow*

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<td>9.15</td>
<td>Vladimir Verkhovlyuk</td>
<td>Hyperfine Structure of MARY Spectrum for Three Spin System ‘Radical Ion / Biradical Ion’ in the Region of J-resonance: A Bridge between Level Crossing and EPR Spectroscopy</td>
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<td>9.50</td>
<td>N. Lukzen</td>
<td>Consistent Description of Kinetics of Degenerate Electron Exchange Reactions and their Effects on ESR and MARY Spectra</td>
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<tr>
<td>10.55</td>
<td>Hisao Murai</td>
<td>Time-Resolved Study on Magnetic Field Effect and EPR of Photochemical Reaction of TMPD in an Aerosol OT Reversed Micelle</td>
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Tuesday, 15 July - Afternoon

13.30  **Session: Advanced Materials**  *Chair: Czeslaw Rudiowicz*

13.30  **Plenary Lecture:**  *Shin-ichi Kuroda*
Electron Spin Resonance of Charge Carriers in Organic Field-effect Devices

**Parallel Session 1: Advanced Materials**  *Chair: Czeslaw Rudiowicz*

14.15  **Subray Bhat**
Broad, Exchange Narrowed EPR Signals of Doped Rare Earth Manganites: Pushing Precision to Limits

14.50  **Toshikazu Nakamura**
Pulsed Magnetic Resonance Study for Functional Molecular Materials

15.15  **K.N. Anuradha**
EPR Evidence for Premonitory Charge-ordering Fluctuations in Hydrothermally Grown Pr0.57Ca0.41Ba0.02MnO3 Nanowires

15.40  Afternoon Tea

**Parallel Session 1: Advanced Materials**  *Chair: Subray Bhat*

16.10  **Peter Dinse**
High Frequency EPR in Material Sciences and Katalysis

16.45  **Aaron Micallef**
Electron Paramagnetic Resonance Studies of Nitroxide-Annulated Phthalocyanines

17.10  **Alex Shames**
Is La0.9Sr0.1MnO3 Crystal a Real Example of Showing the Griffiths Phase Appearance in Doped Perovskite Manganites? EMR Study

17.35  **S.R. Allayarov**
ESR Studies of Direct Fluorination of Fluorinated Polymers

18.00  **Hitoshi Ohta – President APES**
Annual General Meeting of the Asia Pacific EPR Society

19.00-20.30  Poster Session 1 - Mezzanine Foyer (Odd Numbered Posters)

**Parallel Session 2: Quantum Computing**  *Chair: Kazunobu Sato*

14.15  **Kazunobu Sato**
Coherent-Dual ELDOR Technique for Implementation of Molecular-Spin Quantum Computers

14.50  **Johan van Tol**
High Field Phenomena of Qubits

15.15  **Tomohiro Yoshino**
A Single-Crystal ESR/ENDOR Study of Diphenyl Nitroxide Derivatives: Search of Molecular-Spin Bus Systems for Quantum Computers

16.10  **Takeji Takui**

16.45  **Shigeki Nakazawa**
Magnetic Tensors of Weakly Exchange-Coupled Biradicals as Model Systems of Molecular Electron-Spin Quantum Operations

17.10  **Neil Manson**
Optically Induced Spin Polarization in Colour Centres in Diamond and Silicon Carbide and their Application for Quantum Information Processing

17.35  Open Discussion on the Application of ENDOR and ELDOR in Quantum Computing
Wednesday, 16 July - Morning

International EPR Society (IES) and Asia Pacific EPR Society (APES) Award Lectures Session

8.30  IES Silver Medal for Instrumentation
      Chair: Wolfgang Lubitz – President IES

8.35  Hitoshi Ohta
      Direct Determination of the Spin Gap in the Quantum Spin System by High Frequency ESR

9.10  APES Young Scientists Awards
      Chair: Hitoshi Ohta – President APES

9.15  Simon Drew
      Non-coincidence with MoV-dithiolate Folding Angle – Relevance to Molybdenum Enzyme Structure and Function

9.50  Morning Tea

10.20 APES Young Scientists Awards
      Chair: Hitoshi Ohta – President APES

10.25 Takanari Kashiwagi
      Spin Excitations in The Field Induced Phase of the Quasi One-Dimensional S = 1 Heisenberg Antiferromagnet NDMAP

11.00 Historical Perspective of EPR in Australia – Dedication to Prof. John Pilbrow
      Chair: Graeme Hanson

12.00 Free Afternoon / Half Day Tours
Thursday, 17 July - Morning

Session: Geometric and Electronic Structure: Quantum Chemistry and Computer Simulation
Chair: Wolfgang Lubitz

8.30 Plenary Lecture: Peter Comba
The Importance of EPR Spectroscopy for the Determinations of Structures, Equilibria and Dynamics of Mono- and Oligonuclear Copper(II) Complexes

Parallel Session 1: Geometric and Electronic Structure: Quantum Chemistry and Computer Simulation
Chair: Wolfgang Lubitz

9.15 Vasily Oganessian
Strategies for the Computer Simulation of the Electron Paramagnetic Resonance Spectra of Exchange Coupled Transition Metal Systems

9.50 Christopher Noble
Spectra of Exchange Coupled Transition Metal Systems

10.15 Simon Benson
iResonanz: An EPR Simulation Environment

10.40 Morning Tea

Parallel Session 1: Geometric and Electronic Structure: Quantum Chemistry and Computer Simulation
Chair: Takeji Takui

11.10 Czeslaw Rudowicz
Methodology for Analysis and Modeling of EMR Data for Transition Ions at Low Symmetry Sites in Crystals

11.45 Sushil Misra
Rigorous Calculation of 6-pulse DQC Signal in Hilbert Space following the Coherence Pathways Application to Distance Measurements

12.10 Kenji Sugisaki
An ab initio Approach to Spin-Spin Contributions to the Zero-Field Splitting Tensors of Organic Molecules: Calculations of Various Types of Triplet Diradicals

12.35 Lunch

Parallel Session 2: Applications of EPR Spectroscopy in Inorganic Chemistry
Chair: Allan McKinley

9.15 Prem Chand
Electron Paramagnetic Resonance Study of Vanadyl Ions Doped in Ferroelectric Guanidinium Uranyl Sulphate Trihydrate Single Crystal

9.50 M.R. Prathapachandra Kurup
EPR Spectral Studies of Some Polynuclear Copper (II) Complexes

10.15 K. Venkateswara Rao
EPR of Nanocrystalline Mg1-xCuxO (0.025≤x≤0.2)

11.10 John Boas
EPR of Reduced Polyoxometallates: Traps for the Unwary

11.45 D.P. Paul
Magnetic Properties of Cd Substituted Li-ferrites

12.10 P. Sambasiva Rao
Identification of Interstitial Substitution of Two Mn(II) Sites in Triaqua-potassium-bis(malonato) Zincate by Single Crystal EPR Study
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<tr>
<td>13.30</td>
<td>Plenary Lecture: Hideo Utsumi</td>
<td>Development of an in vitro Magnetic Resonance System and its Application to Biomedical Sciences</td>
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<td>14.15</td>
<td>Parallel Session 1: Biomedical EPR Imaging and Spectroscopic Applications</td>
<td>Howard Halpern</td>
<td>Oncologic Applications of Radiofrequency In Vivo EPR Imaging of Oxygen</td>
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<td>Parallel Session 1: Biomedical EPR Imaging and Spectroscopic Applications</td>
<td>Hiroshi Hirata</td>
<td>Superresolution EPR Imaging: Phantom and Animal Experiments</td>
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<td>16.00</td>
<td>Parallel Session 1: Biomedical EPR Imaging and Spectroscopic Applications</td>
<td>Peter Lay</td>
<td>Chromium in Cancer and Dietary Supplements</td>
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<td>16.00</td>
<td>Parallel Session 2: Probing Motional Dynamics with EPR Spectroscopy</td>
<td>Sergei Dzuba</td>
<td>Small-Amplitude Motions of Nitroxides in Glassy Liquids Observed with Electron Spin Echo: the Link to Anharmonic Vibrations, to and Relaxations</td>
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<td>16.35</td>
<td>Harald Schmidt</td>
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<td>Applications of EPR in Cardiovascular Disease: From Experimental Analysis to Personalised Medicine</td>
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<td>Debamalya Banerjee</td>
<td>Spin Probe Signature of Freezing in Water Slow Cooling Experiment: Our Observation is Global or Local?</td>
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<td>17.00</td>
<td>Christopher Jones</td>
<td>Boris Rakvin</td>
<td>Dynamic Properties of the Stable Paramagnetic Centres in the L-alanine Crystal Lattice</td>
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<td>17.25</td>
<td>V.G. Podoprigorova</td>
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<td>EPR Imaging in Pulmonology</td>
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<td>K.P. Mishra</td>
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<td>Radiation Oxidative Stress Studies by Spin Label and Electron Spin Resonance Spectroscopy</td>
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<td>19.00-20.30</td>
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Friday, 18 July – Morning

**Session: Protein Spin Labelling**  
*Chair: Elena Bagryanskaya*

8.30 **Plenary Lecture: Candice Klug**  
Functional Dynamics of the Nucleotide Binding Domain of the MsbA ATPase

9.15 **Louise Brown**  
Probing the structure and conformational changes of cardiac Troponin using Site-Directed Spin Labeling

9.50 **Boris Martinac**  
Open Channel Structure of MscL: A Patch-clamp and Spin labelling Study

10.15 Morning Tea

10.55 **Jimmy Feix**  
The Interaction of Antimicrobial Peptide CM15 with Membranes

11.30 **Toshiaki Arata**  
Spin-labeling Dipolar ESR Spectroscopy: Application to Dynamics of Unique Elements of Kinesin Motor and Muscular Troponin/Tropomyosin Switch Proteins

11.55 **James Cooke**  
Switch Peptide Movement of Troponin observed by CW and DEER Distance

12.20 **Graeme R. Hanson and Harald Schmidt**  
National Biomedical EPR Centre – Australia: High Field and Imaging Modalities

13.00 Lunch

**Session: Photoexcited States**  
*Chair: Sergei Dzuba*

14.00 **Seigo Yamauchi**  
Time-Resolved 95 GHz EPR Studies on the Excited States

14.35 **Gerd Kothe**  
Exploring Quantum Oscillations in Photo-excited Triplet States by High-Time Resolution EPR

15.10 Afternoon Tea

**Session: Photoexcited States**  
*Chair: Peter Dinse*

15.40 **Plenary Lecture: Elena Bagryanskaya**  
Thermal and Optical Switching of the Exchange Interactions in Nitroxide-Copper(II)-Nitroxide Clusters as Studied by EPR

16.25 **Closing Ceremony**  
*Chair: Michael Davies, Graeme Hanson, John Pilbrow*

18.30 Predinner Drinks

19.00 Conference Dinner