

## ANZMAG NEWS - FEBRUARY 2023

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Dear all,

Welcome to February 2023 edition of ANZMAG. I hope you have all had a great start to 2023 – can you believe it is almost March already?

### CONFERENCES

- **ISMAR** - As I am sure you are all aware, the 23<sup>rd</sup> International Society of Magnetic Resonance (ISMAR23) conference is being held in Brisbane from the 20-25<sup>th</sup> August. Please save the date and keep an eye on the website at <https://www.ismar2023.org> for details coming soon.
- There is a **Pre-ISMAR NMR** workshop from 13<sup>th</sup> to 20<sup>th</sup> August at the Moreton Bay Research Station on North Stradbroke Island. The course is intended for PhD students and postdocs actively working with NMR. Applications. Please send applications to Prof Gottfried Otting, [gottfried.otting@anu.edu.au](mailto:gottfried.otting@anu.edu.au) by 15 March 2023. These must include a brief CV and a statement of experience with NMR
- The **10<sup>th</sup> Asia-Pacific NMR Symposium** (APNMR2023) will take place in Taipei on 6-9 September 2023. Please see <https://www.apnmr2023.org> for details.
- **Science Meets Parliament**, which connects STEM experts, policymakers and federal parliamentarians will be held 7-9 March online with an in-person event on the hill on 22<sup>nd</sup> March. You can register and find out more at <https://www.industry.gov.au/news/connect-stem-experts-policymakers-and-parliamentarians-science-meets-parliament-2023>
- The Royal Society of Chemistry's **Annual Twitter Conference** will run over 24 hours starting at 11pm Melbourne time. This year you can submit a poster across 13 subject areas, from analytical chemistry to engineering. Posters win prizes if chosen by the subject chairs (I am one of the chairs of the analytical division). See <https://www.rsc.org/events/detail/75565/2023-rscposter-twitter-conference> for details.

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### AWARDS

- The **Australian Academy of Science** has just opened nominations for its awards which cover early mid and later careers. More details at <https://www.science.org.au/supporting-science/awards-and-opportunities> I am sure that there are plenty ANZMAGers who could be nominated. I have been told that it helps to have an Academy Fellow as a nominator as they can speak up for you in the academy but we have several Academy Fellows in ANZMAG.
- The Australian Museum Eureka Prizes are the country's most comprehensive national science awards, honouring excellence across the areas of research & innovation, leadership, science engagement, and school science. See <https://australian.museum/get-involved/eureka-prizes/> for details for this year.
- The L'Oréal-UNESCO For Women in Science Australia & New Zealand Fellowships are intended to provide practical help for the winners to undertake a one year research project in their chosen fields. See <https://www.forwomeninscience.com.au>
- The Tall Poppy Awards from the Australian Institute of Policy and Science are open for applications. See <https://aip.net.au/tall-poppy-campaign/> for details.
- The Science Excellence Awards South Australia will open soon. Keep an eye out for details at <https://www.scienceawards.sa.gov.au>

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## JOBS

- The [University of Melbourne](#), is recruiting for the Grimwade Research Fellow. The successful applicant will be given a generous start-up package to establish and lead a research program in the Department of Biochemistry and Pharmacology, located within the Bio21 Molecular Science and Biotechnology Institute. Applicants working in the areas of **structural biology and particularly nuclear magnetic resonance spectroscopy**, molecular systems biology, computational biology, RNA technology and advanced imaging techniques are particularly being sought although outstanding applicants in other areas of biochemistry or molecular science will be considered. See <https://jobs.unimelb.edu.au/en/job/911632/grimwade-research-fellow> for details. Deadline is 17<sup>th</sup> March.
- The [University of Adelaide](#) has an opening for a group Leader in Cancer Research. See <https://www.adelaide.edu.au/saigenci/join-our-team/embl-leader> for details.

## BRUKER EPR SEMINAR

Bruker are running an online EPR seminar entitled '[Redox Status of Skin and Blood Measured by EPR Spectroscopy](#)' on March 21<sup>st</sup>. The idea here is that EPR can be used to detect free radicals in skin and blood plasma. This in turn will help tell us more about the redox status, and induced oxidative stress by quantification and characterization of different types of radicals formed in the skin, skin models, skin cells, and blood plasma. If you'd like to find out more please see <https://www.bruker.com/en/news-and-events/webinars/2023/redox-status-of-skin-and-blood-measured-by-epr-spectroscopy.html>

## PAPER OF THE MONTH

This month's Paper of the Month is on the subject of Diamonds. Nano diamonds that is, and their potential use in Magnetic Resonance Imaging by Waddington et al. Nanodiamonds can be detected with MRI via their <sup>13</sup>C nuclei. However, since <sup>13</sup>C is only 1.1% of the diamond lattice, the signal is undetectable with conventional MRI. In this paper the authors show that the presence of paramagnetic centres in diamond offers a means of boosting the weak signal from <sup>13</sup>C using hyperpolarization to transfer the much larger thermal polarization of the centers to the <sup>13</sup>C nuclei, by driving spin transitions, either optically or with microwaves at cryogenic temperatures. The authors show you can use this to spatially resolve millimetre-scale structures. The paper proposes a new imaging modality, unique to nanoparticles, that exploits the phase-contrast between spins encoded with a hyperpolarization that is aligned, or anti-aligned with the external magnetic field. The use of phase-encoded hyperpolarization allows nanodiamonds to be tagged and distinguished in an MRI based on their spin-orientation. This might permit the action of specific bio-functionalized complexes to be directly compared and imaged in future. The paper can be read in full at <https://www.nature.com/articles/s41598-019-42373-w> for those interested.

## STORIES FROM THE WEB

- <https://www.youtube.com/watch?v=dlylC465lwY> - Note a lot of EPR spectroscopy news this month but this is a nice video about the technique and how it is used at the University of Manchester in the UK.
- <https://www.science.org/content/article/mri-all-cheap-portable-scanners-aim-revolutionize-medical-imaging> - An interesting article about the use of portable MRI scanners that you can take to the patient.
- <https://www.technologynetworks.com/analysis/articles/nmr-relaxometry-reveals-turkish-delights-sticky-fingerprints-370381> Using time-domain nuclear magnetic resonance (TD-NMR) relaxometry in evaluating the physical properties of Turkish delight made with syrups and sweeteners as alternatives to sugar.