Dr Benjamin Long, a regular user of solution NMR and well-known face around the NMR lab, recently completed his PhD under the supervision of Dr Fred Pfeffer (LES) and has now left Deakin to take up a post-doctoral position at the University of Sydney. Check out some of Ben’s recently published NMR work on anion binding using fused polynorbornanes.
The Facility
Outlining our wide range of equipment and capabilities

SOLUTION-STATE NMR SPECTROSCOPY
500 MHz Bruker Avance III standard-bore spectrometer with 3 channels, $^2$H lock, sample changer and Z-gradient.

SOLID-STATE NMR SPECTROSCOPY
Two Bruker Avance III wide-bore spectrometers (4-channel 500 and 2-channel 300 MHz) with a selection of MAS (4.0, 2.5 and 1.3 mm rotor diameter), low-gamma and diffusion probes.

ULTRA-FAST MAGIC ANGLE SPINNING
1.3 mm rotor diameter double-resonance MAS probe that can achieve spinning rates in excess of 60 kHz.

DIFFUSION MEASUREMENTS
Bruker Diff50 probe for the 11.7 T spectrometer capable of gradient strengths of 2500 G/cm and exchangeable inserts for studying $^1$H, $^7$Li, $^{13}$C, $^{31}$P and more.

MICRO-IMAGING
Micro5 and Micro2.5 probes with X, Y and Z gradients allowing 3-dimensional imaging and spectroscopy from samples a few cm in size using $^1$H, $^7$Li, $^{13}$C, $^{19}$F and other nuclei.

VARIABLE TEMPERATURE
All of our equipment can support variable temperature experiments with automated temperature control.

Increased Access to the Periodic Table
A new custom-built NMR probe has expanded our solid-state NMR capabilities

- We recently installed a new NMR probe capable of tuning to low frequency nuclei. Many elements in the periodic table have NMR frequencies that are too low to be observed using off-the-shelf commercial probes (shown in red in the figure below). The new probe will allow us to study these nuclei (and many others).

- The probe also has a second channel specifically tuned to the $^2$H frequency, allowing us to carry out cross polarisation and/or proton decoupling experiments, which boost sensitivity and resolution.

- Additionally, the probe has an extended operating temperature range of $-150$ to $+250$ °C.

Deakin NMR Around the World
NMR group members Dr Luke O’Dell and Dr Haijin Zhu recently travelled across continents to represent Deakin’s NMR facility and the IFM at the 14th Asian Conference on Solid State Ionics (Singapore) and the 56th Rocky Mountain Conference on Magnetic Resonance (Colorado, USA). The latter conference in particular is one of the world’s major solid-state NMR meetings and Luke and Haijin both gave well-received talks to an audience of leading experts in the field.

The NMR group will also have a large presence at the upcoming International Symposium on Polymer Electrolytes (ISPE), to be held at The Pier in Geelong in August. We hope to see you there!

CONTACT US
Dr Luke O’Dell
Institute for Frontier Materials, Deakin University
Waurn Ponds Campus, Locked Bag 20000
Geelong Victoria 3220 Australia

Email: luke.odell@deakin.edu.au
Tel: +61 3 52273076