

**Dr Scott A. Willis**  
**Publications, Presentations & Grants**

**Patent Applications:**

1. **Willis, S. A.**; Price, W. S.; Dennis, G. R.; Zheng, G. International Application published under the Patent Cooperation Treaty (PCT), World Intellectual Property Organisation (WIPO), **International Publication Date:** 12<sup>th</sup> September 2014, **Filing Date:** 5<sup>th</sup> March 2014, **Priority Date:** 6<sup>th</sup> March 2013, **International Publication Number:** WO 2014/134666 A1, **International Application Number:** PCT/AU2014/000202, **Priority Number:** 2013900772 (AU), **Title:** Method & Apparatus for Separation of Mixtures, **Applicant:** The University of Western Sydney.

For information see:

[https://www.westernsydney.edu.au/\\_data/assets/pdf\\_file/0005/1019948/151026\\_INN2974\\_NanoRate\\_het\\_v04.pdf](https://www.westernsydney.edu.au/_data/assets/pdf_file/0005/1019948/151026_INN2974_NanoRate_het_v04.pdf)

Also:

<https://www.westernsydney.edu.au/research/research>

**Book Chapters:**

1. Stait-Gardner, T.; **Willis, S. A.**; Yadav, N. N.; Zheng, G.; Price, W. S., NMR diffusion measurements of complex systems. In *Diffusion Fundamentals III*, Chmelik, C.; Kanellopoulos, N.; Kärger, J.; Theodorou, D., Eds. Leipzig University Press: 2009; pp 183 - 204 (**Invited chapter**; also published by the publisher as a journal article).
2. **Willis, S. A.**; Stait-Gardner, T.; Virk, A. S.; Masuda, R.; Zubkov, M.; Zheng, G.; Price, W. S., Chapter 4. Diffusion: Definition, description and measurement. In *Modern NMR Techniques for Synthetic Chemistry*, Fisher, J., Ed. CRC Press, Taylor and Francis: 2014; pp 125 - 176.
3. **Willis, S. A.**; Stait-Gardner, T.; Torres, A. M.; Price, W. S., Chapter 2 - Fundamentals of diffusion measurements using NMR. In *New Developments in NMR No. 9: Diffusion NMR of confined systems: Fluid transport in porous solids and heterogeneous materials*, Valiullin, R., Ed. Royal Society of Chemistry: 2017; pp 16 - 51.
4. **Willis, S. A.**; Stait-Gardner, T.; Torres, A. M.; Zheng, G.; Price, W. S., Chapter 12 - NMR Versatility. In *Diffusive Spreading in Nature, Technology and Society*, Bunde, A.; Caro, J.; Kärger, J.; Vogl, G., Eds. Springer: 2018; pp 233 - 260. (Invited Chapter). This book was awarded the *Literature Prize of the Fonds der Chemischen Industrie (2019)*.

**Journal Publications:**

1. Stait-Gardner, T.; **Willis, S. A.**; Yadav, N. N.; Zheng, G.; Price, W. S., NMR diffusion measurements of complex systems, *Diffusion Fundamentals Special Issue "Diffusion Fundamentals III"*, **2009**, *11*, 1 - 22 (**Invited**; also published by the publisher as a book chapter).

2. **Willis, S. A.**; Dennis, G. R.; Zheng, G.; Price, W. S., Hydrodynamic size and scaling relations for linear and 4 arm star PVAc studied using PGSE NMR, *J. Mol. Liq.* **2010**, *156*, 45-51 (**Invited**; Special Issue in honour of Prof. Victor Lobo on the occasion of his 70<sup>th</sup> birthday).
3. **Willis, S. A.**; Dennis, G. R.; Zheng, G.; Price, W. S., Averaging effects in PGSE NMR attenuations observed in bimodal molecular weight PMMA solutions, *Macromolecules* **2010**, *43*, 7351-7356.
4. **Willis, S. A.**; Dennis, G. R.; Zheng, G.; Price, W. S., Self-diffusion of water in compressed hexagonal phases – Experimental and simulated results, *Diffusion Fundamentals Special Issue: "Diffusion Fundamentals IV Conference"*, **2011**, *16*, 1 - 2 (Abstract published by the publisher of the conference presentation at the *Diffusion Fundamentals IV Conference*, Albany/Troy, NY, USA. (Poster D12), 2011 (21 – 24/08/11))
5. da Costa, V. C. P.; Ribeiro, A. C. F.; Sobral, A. J. F. N.; Lobo, V. M. M.; Annunziata, O.; Santos, C. I. A. V.; **Willis, S. A.**; Price, W. S.; Estes, M. A., Mutual and self-diffusion of charged porphyrins in aqueous solutions, *J. Chem. Thermodyn.* **2012**, *47*, 312-319.
6. **Willis, S. A.**; Price, W. S.; Eriksson-Scott, I. K.; Zheng, G.; Dennis, G. R., Influence of polymer architecture on the averaging effects in PGSE NMR attenuations for bimodal solutions of linear and star poly(vinyl acetates), *J. Mol. Liq.* **2012**, *167*, 110-114.
7. **Willis, S. A.**; Dennis, G. R.; Zheng, G.; Price, W. S., Preparation and physical properties of a macroscopically aligned lyotropic hexagonal phase templated hydrogel, *React. Funct. Polym., Special Issue: Challenges and Emerging Technologies in the Polymer Gels* **2013**, *73*, 911 – 922.
8. Ganbold, B.; Zheng, G.; **Willis, S. A.**; Dennis, G. R.; Price, W. S., The transport and conductivity properties of the ionic liquid EMIMTCM, *J. Mol. Liq.* **2015**, *201*, 96 – 101.
9. Virk, A. S.; Stait-Gardner, T.; **Willis, S. A.**; Torres, A. M.; Price, W. S., Macromolecular crowding studies of amino acids using NMR diffusion measurements and molecular dynamics simulations, *Front. Phys.*, **2015**, *3*, 1 – 15.
10. Gupta, A.; de Campo, L.; Rehmanjan, B.; **Willis, S. A.**; Waddington, L. J.; Stait-Gardner, T.; Kirby, N.; Price, W. S.; Moghaddam, M. J., Evaluation of Gd-DTPA-monophytanyl and phytantriol nanoassemblies as potential MRI contrast agents, *Langmuir*, **2015**, *31*, 1556 - 1563.
11. Gupta, A.; **Willis, S. A.**; Waddington, L. J.; Stait-Gardner, T.; de Campo, L.; Hwang, D.; Kirby, N.; Price, W. S.; Moghaddam, M. J., Gd-DTPA-Dopamine-Bisphytanyl amphiphile: Synthesis, characterisation and relaxation parameters of the nanoassemblies and their potential as MRI contrast agents, *Chem. Euro. J.*, **2015**, *21*, 13950 - 13960.

12. Gupta, A.; **Willis, S. A.**; Stait-Gardner, T.; Moghaddam, M. J.; Price, W. S., Fast determination of the  $^1\text{H}$  relaxivities of MRI contrast agents, *Magn. Reson. Chem.*, **2016**, *54*, 58 - 61.
13. Virk, A. S.; Torres, A. M.; **Willis, S. A.**; Price, W. S., NMR diffusion studies of spherical molecules: Tetramethylsilane and buckyballs, *J. Mol. Liq.*, **2016**, *214*, 157 - 161.
14. Zubkov, M.; Dennis, G. R.; Stait-Gardner, T.; Torres, A. M.; **Willis, S. A.**; Zheng, G.; Price, W. S., Physical characterisation using diffusion NMR spectroscopy, *Magn. Reson. Chem.*, **2017**, *55*, 414-424.
15. **Willis, S. A.**; Dennis, G. R.; Stait-Gardner, T.; Zheng, G.; Price, W. S., Determining a 'diffusion-averaged' characteristic ratio for aligned lyotropic hexagonal phases using PGSE NMR self-diffusion measurements, random walk simulations and obstruction models, *J. Mol. Liq.*, **2017**, *236*, 107-116.
16. Stait-Gardner, T.; Torres, A.; Zubkov, M.; **Willis, S. A.**; Zheng, G.; Price, W. S., Diffusion NMR: A Tool to Investigate the Dynamics of Organic Systems, *Curr. Org. Chem.*, **2018**, *22*, 758 – 768.
17. Wijesekera, D.; **Willis, S. A.**; Gupta, A.; Torres, A. M.; Zheng, G.; Price, W. S., NMR Diffusion and Relaxation Studies of 2-nitroimidazole and Albumin Interactions, *Spectrochim. Acta. Mol. Biomol. Spectr.*, **2018**, *193*, 318 – 323.
18. **Willis, S. A.**; Zheng, G.; Torres, A. M.; Stait-Gardner, T.; Price, W. S., A Simple and Effective Binomial Block Based Pulse Sequence Capable of Suppressing Multiple NMR Signals. *J Phys. Chem. A* **2018**, *122*, 9712-9720.

#### Conference Poster Presentations:

1. **Willis, S. A.**; Dennis, G. R.; Price, W. S., Anisotropic diffusion in liquid crystal polymer hydrogels – Studying phases with  $^2\text{H}$  NMR, *2nd Asia-Oceania Neutron Scattering Neutron School event*, ANSTO, Lucas Heights, Australia, 2009 (16 – 22/08/09) (Limited to 40 people with selection based on a submitted abstract. Two short oral presentations were also given at this event – one was a single slide topic introduction and the other was a team based presentation about the SANS instrument at ANSTO: 'Quokka').
2. **Willis, S. A.**; Dennis, G. R.; Zheng, G.; Price, W. S., Averaging effects in PGSE NMR attenuations observed in bimodal polymer solutions, *RACI NSW Polymer Group and WSU Workshop about "Polymeric Materials and Polysaccharides"*, WSU Parramatta Campus, Australia. 2010 (05/11/10).
3. **Willis, S. A.**; Dennis, G. R.; Zheng, G.; Price, W. S., Self-diffusion of water in compressed hexagonal phases – Experimental and simulated results, *Diffusion Fundamentals IV Conference*, Albany/Troy, NY, USA. (Poster D12), 2011 (21 – 24/08/11) (Abstract of this presentation was published by the publisher in *Diffusion Fundamentals Special Issue: "Diffusion Fundamentals IV Conference"*, **2011**, *16*, 75, 1 - 2).

4. **Willis, S. A.**; Dennis, G. R.; Zheng, G.; Price, W. S., Simulations of self-diffusion in compressed hexagonal phases, *The Australian and New Zealand Magnetic Resonance Society Conference, ANZMAG 2011 Conference*, Torquay, Australia. 2011 (27/11/11 - 01/12/11).
5. **Willis, S. A.**; Dennis, G. R.; Zheng, G.; Price, W. S., Self-Diffusion in and characteristics of a macroscopically aligned lyotropic hexagonal phase templated hydrogel, *WSU Symposium on MRI and Diffusion 2012*, WSU Campbelltown Campus, Australia. 2012 (30/11/12) (Received “Best Poster” prize for this poster).
6. **Willis, S. A.**; Dennis, G. R.; Zheng, G.; Price, W. S., Self-diffusion of water in a macroscopically aligned lyotropic hexagonal phase templated hydrogel, *Diffusion Fundamentals V Conference*, Leipzig, Germany. (Poster A23), 2013 (26/08/13 - 28/08/13).
7. **Stait-Gardner T.**; **Willis S. A.**; Dean R.; Dwihapsari Y.; Bobek G.; Hennessy A.; Bourne R.; Hoops D.; Yadav N.; Price W. S., The art of NMR and MRI, from applications to theory, *The Art of Physics, Australian Institute of Physics Congress, Incorporating the Australian Optical Society Conference*, Canberra, Australia. 2014 (07/12/14 - 11/12/14).
8. **Stait-Gardner, T.**; **Willis, S. A.**; Dean, R.; Dwihapsari, Y.; Bobek, G.; Hennessy, A.; Bourne, R.; Hoops, D.; Yadav, N.; Price, W. S. The art of NMR and MRI, from applications to theory, *6th WSU NMR, MRI and Diffusion Symposium*, Campbelltown, Australia, 2015 (31/03/15).
9. **Gupta, A.**; Waddington, L. J.; **Willis, S. A.**; de Campo, L.; Stait-Gardner, T.; Price, W. S.; Moghaddam, M. J. Nanoassemblies of paramagnetic amphiphilic chelates as advanced MRI contrast agents, *6th WSU NMR, MRI and Diffusion Symposium*, Campbelltown, Australia, 2015 (31/03/15).
10. **Willis, S. A.**; Stait-Gardner, T.; Price, W. S.; **Bourne, R.**, Double-pulsed gradient spin-echo from DTI in the fibromuscular stroma of the prostate, *23<sup>rd</sup> Annual Meeting & Exhibition of the International Society for Magnetic Resonance Imaging (ISMRM)*, Toronto, Ontario, Canada, (Accepted abstract number 2168, Presented on the 04/06/15 in the “Diffusion Outside the Brain” session), 2015 (30/05/15 - 05/06/15).
11. **Willis, S. A.**; Dennis, G. R.; Zheng, G.; Price, W. S. PGSE NMR vs. SAXS/SANS: obtaining structural characteristic ratios in lyotropic liquid crystal hexagonal phases, *The Australian and New Zealand Magnetic Resonance Society Conference, ANZMAG 2015*, Bay of Islands, New Zealand, (Poster number P-09) 2015 (29/11/15 - 03/12/15).
12. **Wijesekera, D.**; **Willis, S. A.**; Gupta, A.; Torres, A. M.; Zheng, G.; Price, W. S. Characterising the binding of 2-nitroimidazole: A proton NMR study, *The 11<sup>th</sup> Australian and New Zealand Magnetic Resonance Society Conference, ANZMAG 2017*, Kingscliff, NSW, Australia, (Abstract number 25 – presented as a poster and oral presentation) 2017 (02/12/17 - 06/12/17).

13. **Willis, S. A.**; Zheng, G.; Torres, A. M.; Stait-Gardner, T.; Price, W. S. Suppression of multiple sites using binomial type pulses, *The 11<sup>th</sup> Australian and New Zealand Magnetic Resonance Society Conference, ANZMAG 2017*, Kingscliff, NSW, Australia, (Abstract number 122 – presented as a poster) 2017 (02/12/17 - 06/12/17).
14. **Willis, S. A.**; Delicious parallelohedra and the secrets within, *The 12<sup>th</sup> Australian and New Zealand Magnetic Resonance Society Conference, ANZMAG 2019*, Bunker Bay, WA, Australia, 2019 (25/11/19 – 28/11/19; presented 26/11/19 & 27/11/19).
15. **Jones, K.**; Gupta, A.; **Willis, S. A.**; Price, W. S. Probing the ethanol and water azeotrope using magnetic resonance, *The 12<sup>th</sup> Australian and New Zealand Magnetic Resonance Society Conference, ANZMAG 2019*, Bunker Bay, WA, Australia, 2019 (25/11/19 – 28/11/19; presented 26/11/19 & 27/11/19).
16. **Gupta, A.**; **Willis, S. A.**; Stait-Gardner, T.; Price, W. S. Accelerating relaxivity measurements by exploiting bulk magnetic susceptibility effects of paramagnetic metal ions, *The 12<sup>th</sup> Australian and New Zealand Magnetic Resonance Society Conference, ANZMAG 2019*, Bunker Bay, WA, Australia, 2019 (25/11/19 – 28/11/19; presented 25/11/19 & 26/11/19).

#### Conference Oral Presentations:

1. **Willis, S. A.**; Dennis, G. R.; Zheng, G.; Price, W. S., Development of Brownian ratchets for solution phase chemical separation, *WSU College of Health and Science – Research Futures Annual Postgraduate Forum*, WSU Werrington South Campus, Australia. 2009 (02 – 04/06/09).
2. **Willis, S. A.**; Dennis, G. R.; Zheng, G.; Price, W. S., Development of Brownian ratchets for solution phase chemical separations – Simulations, *WSU College of Health and Science – Research Futures Postgraduate Forum*, WSU Werrington South Campus, Australia. 2010 (07 – 08/06/10).
3. **Willis, S. A.**; Dennis, G. R.; Zheng, G.; Price, W. S., Development of Brownian ratchets for solution phase chemical separations – The effect of particle size and diffusion in the flow direction, *WSU College of Health and Science – Research Futures Postgraduate Forum*, WSU Kingswood Campus, Australia. 2011 (08 – 10/06/11) (Received “The School of Biomedical and Health Sciences Best presentation at the College Research Futures Postgraduate Forum” for this presentation).
4. **Willis, S. A.**; Dennis, G. R.; Zheng, G.; Price, W. S., Exploring MathCAD and applications to Brownian dynamics simulations and data analysis, *WSU College of Health and Science Research Lecture Series*, WSU Campbelltown Campus (and video conference with Hawkesbury, Parramatta and Kingswood Campuses), Australia. 2011 (10/08/11).
5. **Willis, S. A.**; Dennis, G. R.; Zheng, G.; Price, W. S., Development of Brownian ratchets for solution phase chemical separations, *WSU School of Science and Health –*

*Research Showcase and Postgraduate Research Forum*, WSU Kingswood Campus, Australia. 2012 (02 – 03/07/12).

6. Price, W. S.; **Willis, S. A.**; Dennis, G. R.; Zheng, G., NMR diffusion measurements in gels and complex systems, *9th International Gel Symposium, GelSympo 2012*, Tsukuba, Japan. 2PL6 (Plenary Lecture), 2012 (09/10/12 - 12/10/12).
7. **Willis, S. A.**; Dennis, G. R.; Zheng, G.; Price, W. S., DTI of a macroscopically aligned lyotropic hexagonal phase templated hydrogel, *5th Asia-Pacific NMR Symposium in conjunction with ANZMAG 2013 Conference*, Brisbane, Australia. Abstract 102 Presentation in Parallel Session 15, 2013 (27/10/13 - 31/10/13).
8. **Willis, S. A.**; Stait-Gardner, T., Overview of high-field MRI projects at the University of Western Sydney, *Ingham Institute Research Seminar Series*, Ingham Institute, Sydney, Australia. 2014 (21/10/14 with webcast).
9. **Willis, S. A.**, Magnetic Resonance Imaging (MRI) and Some Applications - Workshop for the 2015 WSU Symposium on NMR, MRI and Diffusion, *Workshop on Nuclear Magnetic Resonance/Imaging and their Applications for the 6th WSU NMR, MRI and Diffusion Symposium*, Campbelltown, Australia, 2015 (30/03/15).
10. Gupta, A.; Stait-Gardner, T.; **Willis, S. A.**; Moghaddam, M.; Price, W. S., A Fundamental Approach to Better MRI Contrast, *Liverpool Cancer Therapy MRI SIM Collaborators Meeting*, Thomas and Rachel Moore Education Centre, Liverpool Hospital, Liverpool, Australia, 2015 (21/05/15).
11. Price, W. S.; Dennis, G. R.; Ghadirian, B.; Stait-Gardner, T.; Torres, A. M.; **Willis, S. A.**; Zheng, G. Using Liquids to Probe Solids with NMR Diffusometry, *The International Chemical Congress of Pacific Basin Societies, PACIFICHEM 2015*, Honolulu, Hawaii, USA, (Presentation in Area 7 (Biological) in Advances in Biological Solid-State NMR (#120), Talk number 62 (15-P-8 Invited Lecture), 2015 (15/12/15 - 20/12/15).
12. Price, W. S.; Dennis, G. R.; Donohoe, M.; **Willis, S. A.**; Zheng, G. Probing the Dynamics of Ionic Liquids with NMR, *The 7th Australian Symposium on Ionic Liquids (ASIL7)*, Newcastle, Australia, Talk number 37 (O37), 2016 (23/05/16 – 26/05/16; presentation on the 25/05/16).
13. Gupta, A.; **Willis, S. A.**; Dennis, G. R.; Price, W. S., Targeted MRI Contrast Agents, *6th Annual Australian MRI-LINAC Program Collaborators Meeting*, Ingham Research Institute, Sydney, Australia. 2016 (09/12/16).
14. Price W. S.; Stait-Gardner, T.; **Willis, S. A.**; Aihara, Y., Towards Accurate Diffusion Measurements of Slowly Diffusing Species, *Diffusion Fundamentals VII Conference*, Moscow, Russia, 2017 (03/07/17 - 07/07/17; presentation on the 07/07/17 in the session: Methods of Diffusion Measurements).
15. Price W. S.; Stait-Gardner, T.; **Willis, S. A.**; Aihara, Y., Accurate High Gradient Diffusion Measurements of Slowly Diffusing Species, *Taiwan-Japan Biomedical Symposium on Magnetic Resonance*, Tainan, Taiwan, 2017 (L12 Invited Lecture).

16. Wijsekera, D.; **Willis, S. A.**; Gupta, A.; Torres, A. M.; Zheng, G.; Price, W. S. Characterising the binding of 2-nitroimidazole: A proton NMR study, *The 11<sup>th</sup> Australian and New Zealand Magnetic Resonance Society Conference, ANZMAG 2017*, Kingscliff, NSW, Australia, (Abstract number 25 – presented as a poster and oral presentation) 2017 (02/12/17 - 06/12/17).
17. Wijsekera, D.; Gupta, A.; Zaman, M. S.; **Willis, S. A.**; Price, W. S. Evaluation of hypoxia using MRI, *Australian MRI-LINAC Collaborators Meeting*, Newcastle, NSW, Australia, 2017 (08/12/17 - 09/12/17).
18. Price, W. S.; Stait-Gardner, T.; Torres, A.; **Willis, S. A.**; Zheng, G.; Aihara, Y. NMR Diffusion Measurements: Easier, Better, Faster, *24<sup>th</sup> Conference of National Magnetic Resonance Society*, Department of Physics, IISER Mohali, Punjab, India, 2018 (16/02/18 - 19/02/18) (PL1).
19. Price, W. S.; Gupta, A., Stait-Gardner, T.; Torres, A.; **Willis, S. A.**; Zheng, G. Introduction to NMR in Food Science including Food Adulteration and Fraud, *Rapid Detection of Adulteration and Fraud in Foods by FTIR and NMR Techniques*, Chulalongkorn University, Thailand, 2018 (21/05/18 – 22/05/18).
20. Price, W. S.; Stait-Gardner, T.; Torres, A.; **Willis, S. A.**; Zheng, G.; Aihara, Y. Reconsidering NMR Diffusion Measurements, *X<sup>th</sup> Symposium on: Nuclear Magnetic Resonance in Chemistry, Physics and Biological Sciences*, Polish Academy of Sciences, Warsaw, Poland, 2018 (26/09/18 – 28/09/18) (FL-21, Plenary Lecture).
21. Price, W. S.; Gupta, A.; Stait-Gardner, T.; Torres, A.; **Willis, S. A.**; Zheng, G. Optimising NMR Diffusion Measurements, *24<sup>th</sup> Taiwan Biophysics Conference*, National Ilan University (in conjunction with the National Tsing Hua University and the National Taiwan University), Ilan, Taiwan, 2019 (29/05/19 – 01/06/19; Presentation on 01/06/19).
22. Price, W. S.; Gupta, A.; Stait-Gardner, T.; Torres, A.; **Willis, S. A.**; Zheng, G.; Aihara, Y., Better, Faster, More Versatile NMR Diffusion Measurements, *Diffusion Fundamentals VIII Conference*, Erlangen, Germany, 2019 (01/09/19 - 05/09/19; presentation on the 03/09/19).
23. Stait-Gardner, T.; **Willis, S. A.**; Ishikawa, M.; Xiao, Z.; Rogiers, S.; Price, W. S. MRI of the freezing of cold-hardy plants and other plant studies, *The 12<sup>th</sup> Australian and New Zealand Magnetic Resonance Society Conference, ANZMAG 2019*, Bunker Bay, WA, Australia, 2019 (25/11/19 – 28/11/19; presented 26/11/19).
24. Price, W. S.; Gupta, A.; Stait-Gardner, T.; Torres, A.; **Willis, S. A.**; Zheng, G.; Aihara, Y. Diffusion of time-dependent samples, *The 12<sup>th</sup> Australian and New Zealand Magnetic Resonance Society Conference, ANZMAG 2019*, Bunker Bay, WA, Australia, 2019 (25/11/19 – 28/11/19; presented 26/11/19).

#### Other Oral Presentations:

1. **Willis, S. A.**; Dennis, G. R.; Zheng, G.; Price, W. S., *PhD Confirmation of Candidature Presentation*, WSU Campbelltown Campus, Australia. 2010 (26/03/10).
2. **Willis, S. A.**; Dennis, G. R.; Zheng, G.; Price, W. S., *Presentation to the WSU Innovation and Consulting Group IP Evaluation Panel*, WSU Parramatta South Campus, Australia. 2011 (03/05/11).
3. **Willis, S. A.**; Dennis, G. R.; Zheng, G.; Price, W. S., *Presentation to the WSU Innovation IP Evaluation Panel*, WSU Parramatta South Campus, Australia. 2012 (07/09/12).
4. **Willis, S. A.**; Kumar, A.; Price, W. S., *Lecture 7 – Supramolecular Structures*, Lecture for Biodevices Unit 300890 (undergraduate university lecture), WSU Campbelltown Campus, Australia, 2014 (12/05/14).
5. **Willis, S. A.**; Stait-Gardner, T.; Kumar, A.; Price, W. S., *Lecture 11 – Biological Computing and Ion-Channels*, Lecture for Biodevices Unit 300890 (undergraduate university lecture), WSU Campbelltown Campus, Australia, 2014 (19/05/14).
6. **Willis, S. A.**; Price, W. S., *Introduction to (Nuclear) Magnetic Resonance Imaging (MRI) and a little Space Medicine*, Lecture for participants in the iSTEM Space Academy Program – NASA Space Camp coordinated by Dr Ken Silburn (Metropolitan South West Science Teachers Association) with students from Years 9 to 10, WSU Campbelltown Campus with Dr Ragbir Bhathal, Australia, 2014 (30/06/14).
7. Gupta, A.; Price, W. S.; Stait-Gardner, T.; Torres, A.; **Willis, S. A.**; Zheng, G., *Detecting Cancer with Magnets*, Sydney Science Festival 2019, Western Sydney University (Parramatta Campus; 09/08/19).

#### Grants Awarded:

1. **Willis, S. A. (Chief investigator)**; Price, W. S.; Stait-Gardner, T.; Torres, A. M.; Zheng, G.; Ghadirian, B.; Dennis, G. R., Development of pulse sequences and phantom samples for magnetic resonance imaging, Western Sydney University Research Grant Scheme for Early Career Researchers, \$7250, 2013.
2. Zheng, G. (Chief investigator); Price, W. S.; Torres, A. M.; Stait-Gardner, T.; Ghadirian, B.; **Willis, S. A.**, Development of a NMR spectroscopy based biomedical research platform driven by designing the next generation water signal filtering techniques. Western Sydney University Research Grant Scheme, \$9500, 2013.
3. Price, W. S. (Chief investigator); Stait-Gardner, T.; Ghadirian, B.; Torres, A.; **Willis, S. A.**; Zheng, G., MRI from imaging to visualisation. Western Sydney University/School of Science and Health, Catalysing Innovative Learning and Teaching (CILT) grant, \$7500, 2013.



4. Price, W. S.; Stait-Gardner, T.; Torres, A. M.; Zheng, G.; **Willis, S. A.**, Treatment planning for the 21<sup>st</sup> century – Electron density: CT to MRI, Anonymous Philanthropic Donor, \$225000, and WSU, \$230000, 2014.
5. Price, W. S.; Grey, R.; Stait-Gardner, T.; **Willis, S. A.**; WSU Symposium on NMR, MRI and Diffusion, NSW Research Attraction and Acceleration Program, Conference Sponsorship Program 2018, Office of the NSW Chief Scientist & Engineer, within the NSW Department of Industry, \$5000, 2018.
6. Price, W. S.; Grey, R.; **Willis, S. A.**; Stait-Gardner, T.; 9<sup>th</sup> (biennial) Western Sydney University & Inaugural Asian Symposium on NMR, MRI & Diffusion, NSW Research Attraction and Acceleration Program, Conference Sponsorship Program for 2020 conferences, Office of the NSW Chief Scientist & Engineer, within the NSW Department of Planning, Industry & Environment, \$6000, 2020.