
1 Education

- 2007–2012 **University College London**
Ph.D Magnetic Resonance Physics
- 2004–2007 **Imperial College London**
Physics BSc, First Class Honours.
- 1997–2004 **The Minster School, Southwell, Nottinghamshire, England**
GCE A2 (2004): Maths (A), Physics (A), Product Design: Resistant Materials (A).
GCE AS (2003): Chemistry (B), General Studies (A).
GCSE (2002): 11 A*–B Awards
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2 Research experience

- 2007–2012 **University College London**
Ph.D: Parallel Transmit Methods for Arterial Spin Labelling Magnetic Resonance Imaging
Supervisor: Dr David L Thomas
- Project combined parallel transmission and vessel-selective arterial spin labelling (ASL), with the aim of improving vessel specificity whilst having no loss in labelling efficiency and subsequent signal-to-noise ratio. ASL is a completely noninvasive MRI technique for measuring perfusion, most notably in the brain. It uses blood water as an endogenous contrast agent, providing quantitative information about the blood supply to an organ. Vessel-selective ASL provides the ability to visualise and assess the perfusion territory from a given set of arteries.
 - A pair of localised radio frequency (RF) labelling coils for arterial spin labelling were built, and a low power two-channel RF transmitter system capable of parallel transmission was constructed using a recycled spectrometer as its base. These were interfaced to a 3 Tesla Siemens Trio MRI scanner.
 - For safety testing of the labelling coils a novel MRI method was developed and optimised which can accurately measure small temperature changes (on the order of 0.1°C), yielding high resolution maps of temperature change and power deposition.
 - A high SNR B_1 mapping method was implemented and optimised for quickly obtaining accurate B_1 maps of small transmitter coils.
 - An advanced separate coil continuous ASL pulse sequence with a 3D-GRASE acquisition and interleaved background suppression was implemented on the Siemens Trio.
 - A perfusion phantom with distinct vascular territories was designed and constructed using CAD and rapid prototyping.
 - The parallel transmit ASL method was tested on healthy volunteers and showed an improvement in specificity of up to 35%, whilst retaining labelling efficiency compared to a single surface coil placed over one carotid artery.
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3 Publications

- Oliver-Taylor, A., Ordidge, R., Randell, C. and Thomas, D. L. 1204. Parallel Transmit Vessel Selective Arterial Spin Labelling: Phantom and In-Vivo Results. Abstract accepted. Proc. Intl. Soc. Mag. Reson. 20, 2012

- Oliver-Taylor, A., Ordidge, R., Randell, C. and Thomas, D. L. 187. Improving SNR in Small Temperature Change MR Thermometry to Acquire SAR Maps of a Pair of ASL Labelling Coils. Abstract accepted. Proc. Intl. Soc. Mag. Reson. 20, 2012
 - Oliver-Taylor, A., Ordidge, R. and Thomas, D. L. A Perfusion Phantom with Distinct Vascular Territories. Proc. Brit. Chap. ISMRM 2011
 - Oliver-Taylor, A., Ordidge, R. and Thomas, D. L. 2086. Parallel Transmit Vessel Selective Arterial Spin Labelling: A Proof of Concept Simulation. Proc. Intl. Soc. Mag. Reson. 19, 2011
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4 Awards

- **ISMRM Merit Award: Magna Cum Laude** (top 15% within same general category) – Oliver-Taylor, A., Ordidge, R., Randell, C. and Thomas, D. L. 1204. Parallel Transmit Vessel Selective Arterial Spin Labelling: Phantom and In-Vivo Results. Abstract accepted. Proc. Intl. Soc. Mag. Reson. 20, 2012
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5 Public Engagement

- Participated in a stall at the 2012 Cheltenham Science Festival run the the Centre for Advanced Biomedical Imaging (CABI) at University College London. The stall featured a "tabletop" MRI scanner provided by Bruker Biospin with live scanning of small items such as fruit and vegetables, and several presentation areas where various aspects of MRI were presented and explained to the public. My role was to explain the physics of MRI to small groups, using a powerpoint presentation and live props (such as magnets and compasses), and to engage in conversations about MRI and medical imaging as a whole with interested individuals.
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6 Work

June 2012–present

Research Associate in Near Infrared Spectroscopy and MRI Physics, Institute for Womens Health, University College London.

- Part of the Neonatal Magnet Group, a multidisciplinary team of neuroscientists, clinicians and physicists, conducting research into perinatal brain injury and its prevention.
- Responsible for collecting near infrared spectroscopy data in perinatal asphyxia studies, maintaining MRI equipment used in the studies, MRI sequence development/optimisation and data/image analysis.

March 2012–present

Acting Chief Technical Officer for Pan Studio LTD, London.

- Advise on technical feasibility of projects, plan and design and construct interactive elements.

July–December 2009

Radio Frequency Coil Engineer, PulseTeq LTD, Wotton-Under-Edge, Gloucestershire.

- Built and tested product multi-nuclear MRI coils, adhering to a ISO9001 quality control system.
- Engaged in product development to adapt an existing coil design for operation at a different frequency.
- Investigated means to suppress common mode cable shield currents, which was then used to develop a new cable trap design.
- Gained knowledge and experience in RF coils, radio frequency measurements and vector network analyser use, PCB design.

Dec 2006/Jan 2007

Work experience as a Clinical Medical Physicist. Nottingham City Hospital

2002–2006

Various part time and temporary jobs

7 Skills

MR Programming

- Experienced in Siemens/IDEA pulse sequence programming. Attended the IDEA and ICE courses in Raleigh, North Carolina, 2009. Successfully adapted an Actual Flip angle Imaging sequence, and 3D EPI sequence for using a separate transmitter system, and programmed an interleaved background suppression enabled continuous ASL labelling module in a 3D-GRASE pulsed ASL sequence.
- Experience programming SMIS consoles.
- Experience with Varian/Agilent pulse sequence programming. Attended a pulse sequence programming course in Yarnton, Oxfordshire, 2009.

C/C++

Proficient in programming in C and C++, both in a scientific/numerical computation setting, and pulse programming of MR systems.

Matlab

Excellent all round Matlab skills, with particular emphasis on:

- Bloch equation simulations, both rotation matrix and nonlinear, higher order methods.
- MR image acquisition and reconstruction simulations
- Image analysis, for example the analysis of MR thermometry data, and ASL perfusion data during my Ph.D.
- Inverse problems.
- Experience with SPM.

Linux/Unix

High level of proficiency both in using applications and system administration

IT

Extremely proficient experienced in all standard applications on Windows, Linux and OS X; Microsoft Office, LaTeX, SSH, VNC, CAD software.

Workshop

Experience using standard workshop tools, such as pillar drill, lathe, hand tools etc.

Electronics

Experienced in analog and digital electronics design. Particular emphasis on radio frequency circuits, electromagnetic compatibility, and MR compatibility. Also experienced in using the Arduino microcontroller hardware/software platform.

8 Personal

- Between 2009 and 2011 I was a vice warden in a UCL hall of residence, responsible for the student's welfare and in maintaining order and discipline within the hall.
 - During my undergraduate and post graduate studies I have been involved in student societies that put on live music events and provided student bands with facilities to rehearse and meet other musicians. Positions have included both chairman/president and treasurer.
 - I am a keen electric and bass guitar player, and I have played in several bands, requiring teamwork and organisational skills.
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9 References

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