

Timothy Grant Leighton FREng FRS

MA PhD CPhys CEng FCPS FInstP FIOA FASA

Summary: To quote the citation of the 2006 Institute of Physics Paterson Medal, Leighton is “an acknowledged world leader in four fields”.

Work: Institute of Sound and Vibration Research, University of Southampton, Highfield, Southampton SO17 1BJ, UK.

Contact: Email – tgl@soton.ac.uk Telephone - +44 23 80 592291. **Born:** 16-10-63

Simultaneous roles: (i) Associate Dean (Research), Faculty of Engineering and the Environment. (ii) Professor of Ultrasonics and Underwater Acoustics, Institute of Sound & Vibration Research, University of Southampton.

Selected research: <http://www.southampton.ac.uk/engineering/about/staff/tgl.page#research>

Publications: <http://resource.isvr.soton.ac.uk/staff/pubs/pubs90.htm>

Outreach: http://www.southampton.ac.uk/engineering/research/impact/bubble_acoustics.page#media

Biography: <http://www.southampton.ac.uk/engineering/about/staff/tgl.page#background>

Medals and awards:

Year	Award
2015	Commissioned by The Royal Society to write an article to celebrate the 350 th anniversary since its first publications (click http://rspa.royalsocietypublishing.org/content/472/2185/20150624 to download the paper for free)
2014	StarStream awarded ‘Best new product of the year’ by S-lab.
2014	Fellowship of the Royal Society
2014	Rayleigh Medal of the Institute of Acoustics
2014	The second most downloaded paper of 2013 from Proc. Royal Society A: Leighton et al. (2013) Radar clutter suppression and target discrimination using twin inverted pulses, <i>Proceedings of the Royal Society A</i> , 469 , (2160), 20130512-[14pp].
2014	Selected for inclusion in Who’s Who for 2014 onwards
2013	The Helmholtz-Rayleigh Interdisciplinary Silver Medal of the Acoustical Society of America
2012	The 2012 Institute of Chemical Engineering Award for “Water Management and Supply”
2012	Fellowship of the Royal Academy of Engineering
2011	The Brian Mercer Award for Innovation (The Royal Society)
2010	Awarded “Excellent Reviewers of 2010” by <i>IEEE Journal of Oceanic Engineering</i>
2009	Awarded “Excellent Reviewers of 2009” by <i>IEEE Journal of Oceanic Engineering</i>
2009	Finalist for National Business Impact Award, organised by Unico.
2009	R W B Stephens Medal of the Institute of Acoustics
2008	The ‘Medical & Healthcare’ award by ‘The Engineer’ (founded 1856)
2007	Finalist for NHS Innovations award for an ultrasonic medical device
2006	Paterson Medal and Prize of the Institute of Physics
2004	<i>Inaugural</i> Early Career Medal and Award of the International Commission of Acoustics
2002	Tyndall Medal of the Institute of Acoustics
2001	<i>Inaugural</i> International Medwin Prize for Acoustical Oceanography, awarded by the Acoustical Society of America.
2000	Royal Society Leverhulme Trust Senior Research Fellowship
2000	Fellowship of the Institute of Physics
1999	Fellowship of the Institute of Acoustics
1998	Fellowship of the Acoustical Society of America
1994	AB Wood Medal of the Institute of Acoustics
1987	Kingsley Bye-Fellowship, Magdalene College, University of Cambridge
1986	Fellow, Cambridge Philosophical Society
1985	Leslie Wilson Scholarship, Magdalene College, University of Cambridge
1985	Hart Prize, Magdalene College, Cambridge University
1985	Bundi Scholarship, Magdalene College, Cambridge University
1984	Re-elected to College Scholarship (University of Cambridge)
1983	Magdalene College Scholarship (University of Cambridge)

Career

2009	Associate Dean (Research), Faculty of Engineering and the Environment	1992	Lecturer, ISVR, Uni Soton
2007	Deputy Head of School (ISVR)	1991	Senior Research Fellow (Magdalene College, Cambridge Uni) & SERC Advanced Fellowship
1999	Professor, ISVR, Uni Soton	1988	Research Fellow (Magdalene College, Cambridge Uni) & SERC Postdoctoral Fellowship
1997	Reader, ISVR, Uni Soton		

Education

Years	Establishment	Degree
85-88	Cambridge Uni	PhD
82-85	Cambridge Uni	BA Hons (Natural Sciences): Double First Class Honours in Physics & Theoretical Physics (highest mark of the year for experimental project)

PhDs supervised

2015 – Berges B	2008 - Fedele F	2004 - Clarke JWLC	2000 - Hubbuck ER
2012 - Chua GH	2007 - Vian C	2004 - Gutowski M	1999 - Lopes DMB
2011 – Saunders K	2007 - Hirsimaki HM	2004 - Robb GBN	1999 - Evans RCP
2010 – Mantouka A	2005 - Offin DG	2003 - Watson YE	1997 - Radcliffe SA
2010 - Coles D	2005 - Jamaluddin AR	2003 - Power JF	1995 - Ramble DG
2009 - Finfer DC	2005 - Meers SD	2002 - Richards SD	1994 - Phelps AD

(Average duration: ~ 3½ years)

Teaching Taught BEng, MEng, MSc continuously since 1992. A lecture is available at https://www.youtube.com/watch?v=5H4toaWU_IY

Publications since 2012 (a full list of ~400 publications is available at <http://resource.isvr.soton.ac.uk/staff/pubs/pubs90.htm>)

- Leighton, T. G.** (2016) Are some people suffering as a result of increasing mass exposure of the public to ultrasound in air? *Proc. Roy. Soc. A*, **472**(2185), 20150624 (57 pages).
- Solan, M., Hauton, C., Godbold, J.A., Wood, C., Leighton, T.G. and White, P.** (2016) Anthropogenic sources of underwater sound can modify how sediment-dwelling invertebrates mediate ecosystems properties. *Scientific Reports (Nature Publishing Group)*, **6**, 20540 (doi:10.1038/srep20540).
- Birkin, P.R., Offin, D.G., Vian, C.J.B. and Leighton, T.G.** (2015) Electrochemical "bubble swarm" enhancement of ultrasonic surface cleaning. *Physical Chemistry Chemical Physics*, **17**(33), 21709-21715. (doi:10.1039/c5cp02933c).
- Birkin P.R., Offin D.G., Vian C.J.B., Howlin R.P., Dawson J.I., Secker T.J., Herve R.C., Stoodley P., Oreffo R.O.C., Keevil C.W. and Leighton T.G.** (2015) Cold water cleaning of brain proteins, biofilm and bone - harnessing an ultrasonically activated stream. *Physical Chemistry Chemical Physics*, **17**, 20574-20579.
- Howlin R.P., Fabbri S., Offin D.G., Symonds N., Kiang K.S., Knee R.J., Yoganantham D.C., Webb J.S., Birkin P.R., Leighton T.G. and Stoodley P.** (2015) Removal of dental biofilms with a novel ultrasonically-activated water stream. *Journal of Dental Research*, **94**(9), 1303-1309 (doi:10.1177/0022034515589284).
- Berges, B. J. P., Leighton, T. G. and White, P. R.** (2015) Passive acoustic quantification of gas fluxes during controlled gas release experiments. *International Journal of Greenhouse Gas Control*, **38**, 64-79 (doi.org:10.1016/j.ijggc.2015.02.008).
- Blackford, J., Stahl, H., Bull, J., Bergès, B., Cevatoglu, M., Lichtschlag, A., Connelly, D., James, R., Kita, J., Long, D., Naylor, M., Shitashima, K., Smith, D., Taylor, P., Wright, I., Akhurst, M., Chen, B., Gernon, T., Hauton, C., Hayashi, M., Kaieda, H., Leighton, T., Sato, T., Sayer, M., Suzumura, M., Tait, K., Vardy, M., White, P., and Widdicombe, S.** (2014) Detection and impacts of leakage from sub-seafloor deep geological carbon dioxide storage. *Nature Climate Change* **4**, 1011–1016 (doi: 10.1038/nclimate2381).
- Leighton, T. G. and White, P. R.** (2014) Dolphin-inspired target detection for sonar and radar. *Archives of Acoust.*, **39**(3), 319-332 (doi: 10.2478/aos-2014-0037)
- Baik, K., Leighton, T. G. and Jiang, J.** (2014) Investigation of a method for real time quantification of gas bubbles in pipelines. *J. Acoust. Soc. Am.* **136**(2), 502-513 (doi: 10.1121/1.4881922)
- Leighton, T.G., Turangan, C.K., Jamaluddin, A.R., Ball, G.J. and White, P.R.** (2013) Prediction of far-field acoustic emissions from cavitation clouds during shock wave lithotripsy for development of a clinical device, *Proceedings of the Royal Society A*, **469** (2150), 1-21.
- Leighton, T.G., Chua, G.-H., White, P.R., Tong, K.F., Griffiths, H.D. and Daniels, D.J.** (2013) Radar clutter suppression and target discrimination using twin inverted pulses. *Proceedings of the Royal Society A*, **469**(2160), 1-14.
- Baik, K., Jiang, J. and Leighton T.G.** (2013) Acoustic attenuation, phase and group velocities in liquid-filled pipes III: Non-axisymmetric propagation and circumferential modes in lossless conditions. *Journal of the Acoustical Society of America*, **133**(3), 1225–1236.
- Leighton, T.G. and White, P.R.** (2012) Quantification of undersea gas leaks from carbon capture and storage facilities, from pipelines and from methane seeps, by their acoustic emissions, *Proceedings of the Royal Society A*, **468**, 485-510.
- Leighton, T.G., Baik, K. and Jiang, J.** (2012) The use of acoustic inversion to estimate the bubble size distribution in pipelines, *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **468**, 2461-2484.
- Leighton, T.G., Chua, G.H. and White, P.R.** (2012) Do dolphins benefit from nonlinear mathematics when processing their sonar returns? *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **468**(2147) 3517-3532.
- Maksimov, A.O. and Leighton, T.G.** (2012) Pattern formation on the surface of a bubble driven by an acoustic field, *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, **468**, 57-75.
- Chua, G.H., White, P.R. and Leighton, T.G.** (2012) Use of clicks resembling those of the Atlantic bottlenose dolphin (*Tursiops truncatus*) to improve target discrimination in bubbly water with biased pulse summation sonar, *IET Radar Sonar & Navigation*, **6**(6), 510-515.
- Finfer, D.C., White, P.R., Chua, G.H. and Leighton, T.G.** (2012) Review of the occurrence of multiple pulse echolocation clicks in recordings from small odontocetes, *IET Radar Sonar & Navigation*, **6**(6), 545-555.
- Leighton, T.G.** (2012) How can humans, in air, hear sound generated underwater (and can goldfish hear their owners talking)?, *Journal of the Acoustical Society of America*, **131**(3 Pt 2), 2539-2542.
- Leighton, T.G.** (2012) The use of extra-terrestrial oceans to test ocean acoustics students, *J. Acoust. Soc. Am.*, **131**(3 Pt 2), 2551-2555.
- Leighton, T.G., Jiang, J. and Baik, K.** (2012) Demonstration comparing sound wave attenuation inside pipes containing bubbly water and water droplet fog, *Journal of the Acoustical Society of America*, **131**(3 Pt 2), 2413-2421.
- Leighton, T.G., White, P.R. and Finfer, D.C.** (2012) The opportunities and challenges in the use of extra-terrestrial acoustics in the exploration of the oceans of icy planetary bodies, *Earth Moon and Planets*, **109** (1-4), 91-116.

Public service includes:

- Founding Chairman, UK Health Effects of Airborne Ultrasound (HEFUA, <http://tinyurl.com/zrud6nw>);
- Founding Chairman, Network on Antimicrobial Resistance and Infection Prevention (NAMRA; <http://tinyurl.com/h5f8k9b>);
- Government of the United Kingdom's Working Group of the Advisory Committee on Dangerous Pathogens Transmissible Spongiform Encephalopathies Sub Group;
- Scientific Expert Group of the International Commission on Non-Ionizing Radiation Protection;
- Defence Scientific Advisory Council (DSAC), Ministry of Defence (MoD);
- World Federation of Ultrasound in Medicine and Biology Safety Work Group;
- Ministry of Defence Brains Trust, under the MoD Science and Technology Rapid Assistance to Operations (STRATOS) programme;
- Maritime Mine Countermeasures Workgroup, DSAC, MoD;
- Scoping Group on Ultrasound and Infrasound Safety, Health Protection Agency;
- Work Group 22 of Accredited Standards Committee S1 of Acoustical Society of America;