

**Summary:** Founder & Chair of: • Network for AntiMicrobial Resistance and Infection Prevention (NAMRIP; <http://tinyurl.com/h5f8k9b>) • Global-NAMRIP (<https://tinyurl.com/ycdkh92u>) • Health Effects of Ultrasound in Air (HEFUA; <https://tinyurl.com/y8hbpwqc>). I am Professor of Ultrasonics and Underwater Acoustics, Institute of Sound and Vibration Research, University of Southampton (<http://tinyurl.com/zjvjkgg>).

**Born:** 16-10-63 **Publications:** <http://tinyurl.com/gnr5ep7> **Email:** [tgl@soton.ac.uk](mailto:tgl@soton.ac.uk) **Tel:** +44 23 80 592291.

**Work:** Institute of Sound & Vib. Research, Univ. of Southampton, Highfield, Southampton SO17 1BJ UK.

**Medals and awards:**

- **MEDALS:** • the 2017 Clifford Paterson Medal of the Royal Society • the 2014 Rayleigh Medal of the Institute of Acoustics; • the 2013 Helmholtz-Rayleigh Interdisciplinary Silver Medal of the Acoustical Society of America; • the 2009 R W B Stephens Medal of the Institute of Acoustics; • the 2006 Paterson Medal of the Institute of Physics; • the inaugural (2004) Early Career Medal and Award of the International Commission of Acoustics; • the 2002 Tyndall Medal of the Institute of Acoustics; • the 1994 A. B. Wood Medal of the Institute of Acoustics.
- **AWARDS:** • 2018, a Royal Society Lord Leonard and Lady Estelle Wolfson Foundation Translation Award, for the StarHealer invention • the 2017 ‘Wow Factor and Impact’ Public Engagement prize at the 2017 ‘Bringing Research to Life’ roadshow awards for NAMRIP exhibition ‘The Most Dangerous Game in the World’. • the 2016 ‘Wow Factor and Impact’ Public Engagement prize at the 2016 ‘Bringing Research to Life’ roadshow awards for NAMRIP contribution to Cheltenham Science Festival. • the 2014 ‘Product of the Year’ for StarStream™ (S-lab); • the Institute of Chemical Engineering 2012 Award for “Water Management and Supply” for StarStream™; • the 2011 Royal Society Brian Mercer Award for Innovation for StarStream™; • the 2008 ‘Medical & Healthcare’ award from ‘The Engineer’ for LithoCheck™; • the inaugural (2001) International Medwin Prize for Acoustical Oceanography from the Acoustical Society of America.
- **ACADEMICIAN:** • the Royal Society; • the Royal Academy of Engineering; • the Academy of Medical Sciences.
- **OTHER FELLOWSHIPS:** • Fellow of the Institute of Acoustics; • Fellow of the Institute of Physics; • Fellow of the Cambridge Philosophical Society; • Fellow of the Acoustical Society of America.

**Education**

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

**Mentoring:** I supervised 30 PhD’s to completion (*Average duration: ~ 3½ years*); Lectured undergrad and MSc since 1992 (example lecture at <http://tinyurl.com/ot5pffk>); devised and ran ECR training for 8 years.

**Career**

2016	Founder & Chair, Global-NAMRIP	1997	Reader, ISVR, Uni Soton
2015	Founder & Chair, NAMRIP & HEFUA	1992	Lecturer, ISVR, Uni Soton
2009	Associate Dean (Research), Faculty of Engineering & the Environment	1991	Senior Research Fellow (Magdalene College, Cambridge Uni) & SERC Advanced Fellowship
2007	Deputy Head of ISVR	1988	Research Fellow (Cambridge Uni) & SERC Postdoctoral Fellowship
1999	Professor, Ultrasonics & Underwater Acoustics, Uni Soton		

**Leadership highlights**

I led the REF2014 bid that achieved first for power in any and all branches of engineering (<https://tinyurl.com/h7opauq>). From an initial £10k stake, in under 2 years I led NAMRIP to win £7M research funds that would not have otherwise occurred, plus over £15M of funds for collaborations of which NAMRIP was a key organization. NAMRIP formed the basis of 2 spinouts (by other PIs) plus >6 licences, 4 trademarks, 5 patents granted and 11 patents pending. In NAMRIP I funded over 30 new collaborations, led mentoring programmes that transitioned 12 Early Career Researchers into PIs, and devised Public Engagement and Public Policy programmes (<http://tinyurl.com/h5f8k9b>). In 2016 I globalized the network (<https://tinyurl.com/gm4t7bq>).

**Public service includes** • Founding Chairman, Global Network on Antimicrobial Resistance and Infection Prevention (Global-NAMRIP) <https://tinyurl.com/ycdkh92u> • Founding Chairman, Network on Antimicrobial Resistance and Infection Prevention (NAMRA; <http://tinyurl.com/h5f8k9b>); • Founding Chairman, UK Health Effects of Airborne Ultrasound (HEFUA, <http://tinyurl.com/zrud6nw>); • 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 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; • Member, Panels 1 and 6 of Royal Academy of Engineering Membership Committees; • Stage 1 Reviewer, Postdoctoral Fellowships, Royal Academy of Engineering; • Member, Royal Society Fellowship Sectional Committee 4; • Member of the Royal Society’s Wolfson Research Merit Awards Selection Committee 4; • Member of the Royal Society’s Newton Advanced Fellowship assessment panel; • Member, Ingenious Panel Royal Academy of Engineering; • Past Council member and Trustee, Institute of Acoustics; • numerous technical and administrative (e.g. research coordination)

committees for ~5 professional and learned scientific organizations; • 18 times serving as organizer and Chair of a Conference (plus numerous occasion serving as a member of the organizing or scientific advisory committee for a conference); • Member, Editorial Board of the Proceedings of the Royal Society A; • Member, Sectional Committee 4 for Fellowship of the Royal Society.

**Outreach** Since giving the Opening invited lecture to the 1992 Women in Physics Conference (Cambridge UK), to talking to the public about AMR in June 2016 at the Cheltenham Science Festival (<http://tinyurl.com/zwwyq3r>), I conducted outreach, one online lectures (<http://tinyurl.com/ot5pffk>) having 2800 views. StarStream™ alone engendered public comments, for top national science TV shows in **Italy** (4898 Youtube hits, including ‘*Bellissimo video, Grazie*’), **Germany** (271 Youtube hits - <http://tinyurl.com/jmm84yn>), and the **UK** (301 Youtube hits incl. ‘*She is right - that cleaning machine is magic!*’ - <http://tinyurl.com/jf2c6j2>). Videos were posted by the **Royal Society** (4825 Youtube hits, incl. ‘*such a great idea!*’ - <http://tinyurl.com/jatedbb>) and **Ultrawave Ltd.** websites (6306 Youtube hits - <http://tinyurl.com/zya7wpe>). I led NAMRIP’s Public Engagement (<https://tinyurl.com/hczug24>) and Public Policy (<https://tinyurl.com/jgso9h6>) programmes.

### Patents granted since 2015

Leighton TG *et al.* (2018) EU divisional patent from European patent application 15196928.4.

Leighton TG *et al.* (2018) Chinese Patent CN107835720A (published on 23/03/2018).

Leighton TG *et al.* (2017) UK Patent (United Kingdom Patent Number GB2538276) from UK Patent Appl. GB1508167.2.

Leighton TG *et al.* (2017) Japanese Patent #6134138 from Application JP 2012-526053 Uni. Southampton.

Leighton TG *et al.* (2016) European Patent # EP 2470310 from Application 10748081.6

Leighton TG *et al.* (2016) German Patent # 602010029942-2 from Application 10748081.6

Leighton TG *et al.* (2016) Chinese Pat. # 2150243 from Application CN 201080045751.5 Uni. Southampton.

Leighton TG *et al.* (2015) Russian Pat. # 2565705 from Application RU 2012111316 Uni. Southampton.

**International & national guidelines** (a full list of ~400 publications is available at <http://tinyurl.com/gnr5ep7>)

Bryant G, *et al.* (2015) [Minimise transmission risk of CJD and vCJD in healthcare settings. Report on the Prevention of CJD and vCJD by Advisory Committee on Dangerous Pathogens' Transmission Spongiform Encephalopathy \(ACDP TSE\) Subgroup](#). Published as part of the Creutzfeldt-Jakob disease (CJD): guidance, data and analysis reports by the UK Government Department of Health (22 October 2015). Crown Copyright 2015. <http://tinyurl.com/zrjxg8j>

Hannis S, *et al.* (2015) [Review of Offshore Monitoring for CCS Projects](#), IEAGHG Technical Report 2015-02 (July 2015) Copyright 2016 IEAGHG. <http://tinyurl.com/judwf5h>

Barnett S, *et al.* (1998). *World Federation for Ultrasound In Medicine and Biology, Task Group Report for Safety Committee of the WFUMB: Conclusions and recommendations on thermal and non-thermal mechanisms for biological effects of ultrasound. Ultrasound in Medicine and Biology*, **24**, Supplement 1 (59 pages). <http://tinyurl.com/hmvncz8>

**Journal papers since 2016** (a full list of ~400 publications is available at <http://tinyurl.com/gnr5ep7>)

Leighton, T. G., Coles, D. G. H., Srokosz, M. White, P. R. and Woolf, D. K. (2018) [Asymmetric transfer of CO<sub>2</sub> across a broken sea surface](#). *Scientific Reports, (Nature Publishing Group)* Article number: 8301 (doi:10.1038/s41598-018-25818-6) [www.nature.com/articles/s41598-018-25818-6](http://www.nature.com/articles/s41598-018-25818-6)

Duck, F. and Leighton, T. (2018) Frequency bands for ultrasound, suitable for the consideration of its health effects. *J. Acoust. Soc. Am.* (in press).

Fletcher, M. D., Lloyd-Jones, S., White, P. R., Dolder, C. N., Leighton, T. G. and Lineton, B. (2018) Effects of very high-frequency sound and ultrasound on humans part I: adverse symptoms after exposure to audible very-high frequency sound. *J. Acoust. Soc. Am.* (in press).

Fletcher, M. D., Lloyd-Jones, S., White, P. R., Dolder, C. N., Leighton, T. G. and Lineton, B. (2018) Effects of very high-frequency sound and ultrasound on humans part II: a double-blind randomized provocation study of inaudible 20-kHz ultrasound. *J. Acoust. Soc. Am.* (in press).

Fletcher, M. D., Lloyd-Jones, S., White, P. R., Dolder, C. N., Lineton, B. and Leighton, T. G. (2018) Public exposure to ultrasound and very-high frequency sound in air. *J. Acoust. Soc. Am.* (in press)

Maksimov, A. O. and Leighton, T. G. (2018) Acoustic radiation force on a parametrically distorted bubble, *J. Acoust. Soc. Am.*, **143**, 296–305 (doi: 10.1121/1.5020786).

Turangan, C.K., Ball, G.J., Jamaluddin, A.R. and Leighton, T.G. (2017) [Numerical studies of cavitation erosion on an elastic-plastic material caused by shock-induced bubble collapse](#). *Proceedings of the Royal Society A*, **473**(2205), 20170315, 20 pages (doi: 10.1098/rspa.2017.0315) [used as cover image].

Hannis, S., Chadwick, A., Connelly, D., Blackford, J., Leighton, T., Jones, D., White, J., White, P.R., Wright, I., Widdicombe, S., Craig, J. and Dixon, T. (2017) [Review of offshore CO<sub>2</sub> storage monitoring: Operational and research experiences of meeting regulatory and technical requirements](#). *Energy Procedia* **114**, 5967-5980 (doi: 10.1016/i.egvpro.2017.03.1732)

Dogan H., White P.R. and Leighton T.G. (2017) [Acoustic wave propagation in gassy marine sediments: The rheological and the elastic effects](#). *J. Acoust. Soc. Am.*, **141**(3), 2277-2288 (doi: 10.1121/1.497892).

Leighton T.G. (2017) [Comment on ‘Are some people suffering as a result of increasing mass exposure of the public to ultrasound in air?’](#) *Proc. Royal Soc. A*, **473**(2199), 20160828 (13 pages) (doi: 10.1098/rspa.2016.0828).

Leighton T.G. (2017) [The acoustic bubble: Ocean, cetacean and extraterrestrial acoustics, and cold water cleaning](#). *Journal of Physics: Conf. Series*, **797** (2017) 012001 (23 pages) (doi:10.1088/1742-6596/797/1/012001).

Salta M., Goodes L., Maas B., Dennington S., Secker T. and Leighton T.G. (2016) [Bubbles vs. biofilms: A novel method for the removal of marine biofilms attached on antifouling coatings using an ultrasonically activated water stream](#). *Surf. Topogr.: Metrol. Prop.* **4**(3), 034009 (doi: 10.1088/2051-672X/4/3/034009).

Goodes, L.R., Harvey, T.J., Symonds, N. and Leighton, T. G. (2016) [A comparison of ultrasonically activated water stream and ultrasonic bath immersion cleaning of railhead leaf-film contaminant](#). *Surf. Topogr.: Metrol. Prop.* **4**(3), 034003 (doi: 10.1088/2051-672X/4/3/034003).

Ainslie, M.A and Leighton T.G. (2016) [Sonar equations for planetary exploration](#). *J. Acoust. Soc. Am.*, **140**(2), 1400-1419

Leighton T.G., Banda, N., Berges, B., Joseph P.F. and White, P.R. (2016) [Extraterrestrial sound for planetaria: a pedagogical study](#). *J. Acoust. Soc. Am.* **140**(2), 1469-1480 (doi: 10.1121/1.4960785).

Mantouka A., Dogan, H., White P.R. and Leighton T.G. (2016) [Modelling acoustic scattering, sound speed, and attenuation in gassy soft marine sediments](#). *J. Acoust. Soc. Am.*, **140**(1), 274-282 (doi: 10.1121/1.4954753).

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) (doi:10.1098/rspa.2015.0624).

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. and Leighton T.G. (2016) [An activated fluid stream - new techniques for cold water cleaning](#). *Ultrasonics Sonochemistry* **29**, 612-618 (doi:10.1016/j.ulsonch.2015.10.001).