

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>).

Job (Academic): Professor of Ultrasonics and Underwater Acoustics, Institute of Sound and Vibration Research, University of Southampton (<http://tinyurl.com/zjvjkqg>).

Job (Non-academic): Inventor-in-Chief, Sloan Water Technology Ltd. an R&D and manufacturing company formed by purchase from University of Southampton of Leighton patents.

Born: 16-10-63 **Publications:** <http://tinyurl.com/gnr5ep7> **Email:** 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 2018 Clifford Paterson Medal and Lecture 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: • Doctor of Science, University of Cambridge • 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: • Inaugural Distinguished Fellow of the International Institute of Acoustics and Vibration • 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.

Biographies: • Kenward, M. (2017) [A talent for bursting bubbles](https://tinyurl.com/y97rwofl). *Ingenia*, **73**, 38-42 <https://tinyurl.com/y97rwofl>

• Webb, J. (2016) [Resistance fighter takes the battle to microbes](https://tinyurl.com/zj75qzg), *New Scientist* **229**(3066), 32-33 (doi: 10.1016/S0262-4079(16)30523-1) <https://tinyurl.com/zj75qzg>

Education

Years	University	Degree
85-88	Cambridge	PhD (Cavendish Laboratory, University of Cambridge)
82-85	Cambridge	MA 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>).

In 2018 purchase of my patent portfolio from the University of Southampton led to the formation of Sloan Water Technology Ltd., an R&D and manufacturing company employing multidisciplinary staff, engineers, technical and admin staff, in which I am Inventor-in-Chief.

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 (NAMRIP; <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; • Past Member of the Royal Society's Wolfson Research Merit Awards Selection Committee; • Member of the Royal Society's Newton Advanced Fellowship assessment panel; • Past 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; • Chair, 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.
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) The Netherlands Patent Number 2470310 from Application No. 10748081.6
Leighton TG et al. (2016) UK Patent Number 2470310 from Application No. 10748081.6
Leighton TG et al. (2016) French Patent Number 2470310 from Application No. 10748081.6
Leighton TG et al. (2016) Italian Patent Number 2470310 from Application No. 10748081.6
Leighton TG et al. (2016) Chinese Pat. # 2150243 from Application CN 201080045751.5.
Leighton TG et al. (2015) Russian Pat. # 2565705 from Application RU 2012111316.

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/hmvmcz8>

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

1. **Piper, A.T., White, P.R., Wright, R.M., Leighton, T. G., and Kemp, P.S.** (2019) [Response of seaward-migrating European eel \(*Anguilla anguilla*\) to an infrasound deterrent.](#) *Ecological Engineering*, **127**(2019) 480–486 (doi: [10.1016/j.ecoleng.2018.12.001](https://doi.org/10.1016/j.ecoleng.2018.12.001)).
2. **Leighton, T. G., Coles, D. G. H., Srokosz, M., White, P. R. and Woolf, D. K.** (2018) [Asymmetric transfer of CO₂ across a broken sea surface.](#) *Scientific Reports*, (Nature Publishing Group) **8**, Article number: 8301 (doi:10.1038/s41598-018-25818-6) www.nature.com/articles/s41598-018-25818-6
3. **Leighton, T.G.** (2018) [Can we end the threat of Anti-Microbial Resistance once and for all?](#) *Science in Parliament*, **74**(3), 29–32
4. **Leighton, T.G.** (2018) Ultrasound in air—Guidelines, applications, public exposures, and claims of attacks in Cuba and China. *J. Acoust. Soc. Am.* **144**(4) 2473–2489 (doi: 10.1121/1.5063351). <https://doi.org/10.1121/1.5063351>
5. **Duck, F. and Leighton, T.G.** (2018) Frequency bands for ultrasound, suitable for the consideration of its health effects. *J. Acoust. Soc. Am.* **144**(4) 2490–2500 (doi: 10.1121/1.5063578) <https://doi.org/10.1121/1.5063987>
6. **Fletcher, M.D., Lloyd Jones, S.D., 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.* **144**(4), 2511–2520 (doi: 10.1121/1.5063819) <https://doi.org/10.1121/1.5063819>
7. **Fletcher, M.D., Lloyd Jones, S.D., 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.* **144**(4), 2521–2531 (doi: 10.1121/1.5063818) <https://doi.org/10.1121/1.5063818>
8. **Fletcher, M.D., Lloyd Jones, S.D., 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.* **144**(4), 2554–2564 (doi: 10.1121/1.5063817) <https://doi.org/10.1121/1.5063817>
9. **Dolder, C.N., Fletcher, M.D., Lloyd Jones, S., Lineton, B., Dennison, S.R., Symmonds, M., White, P.R. and Leighton, T.G.** (2018) Measurements of ultrasonic deterrents and an acoustically branded hairdryer: Ambiguities in guideline compliance. *J. Acoust. Soc. Am.* **144**(4), 2565–2574 (doi: 10.1121/1.5064279) <https://doi.org/10.1121/1.5064279>
10. **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).

11. **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].
12. **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 CO₂ storage monitoring: Operational and research experiences of meeting regulatory and technical requirements](#). *Energy Procedia* **114**, 5967-5980 (doi: 10.1016/j.egypro.2017.03.1732)
13. **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).
14. **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).
15. **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).
16. **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).
17. **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).
18. **Ainslie, M.A and Leighton T.G.** (2016) [Sonar equations for planetary exploration](#). *J. Acoust. Soc. Am.*, **140**(2), 1400-1419
19. **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).
20. **Leighton T.G. and Petculescu A.** (2016) [Acoustic and related waves in extraterrestrial environments](#). *J. Acoust. Soc. Am.*, **140**(2), 1397-1399-1419 (doi: 10.1121/1.4961539) (peer reviewed Guest Editorial)
21. **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).
22. **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).
23. **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).
24. **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.ultsonch.2015.10.001).