RESUME

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DR. STUART A. KINGSLEY

Resume

Education:

B.Sc. Honours, Electrical and Electronic Engineering, <u>City University</u>, London, England (1967-1972).

Ph.D. Electronic and Electrical Engineering, <u>University College London</u>, London, England (1972-1975).

Employment:

Thorn Electrical Industries as Thin Sandwich Course Student (U.K.) 1967-1972.

University College London as Research Assistant (U.K.) 1975-1981.

Battelle Columbus Division as Principal Research Scientist (U.S.) 1981-1985.

Battelle Columbus Division as Senior Research Scientist (U.S.) 1985-1987.

Fiberdyne Optoelectronics as Fibre Optic Consultant (U.S.) 1987-1992.

SRICO, Inc. as Vice-President of Engineering (U.S.) 1992-2002.

SRICO, Inc. as Chief Scientist (U.S.) 2002-2007.

The Columbus Optical SETI Observatory (ETI Photonics) as Director (U.S.) 1993-2007.

The Bournemouth Optical SETI Observatory as Director (U.K.) 2008-

Fiberdyne Optoelectronics as Fibre-Optic Consultant (U.K.) 2008-

SRICO, Inc. as Chief Scientist (U.K.) 2010-

Experience:

Developed several coherent fibre-optic data-highway concepts which exploit the microphonic nature of optical fibres when conveying coherent light. Involved in producing a variety of fibre-optic sensors, including fibre-optic inertial rotation sensors. Inventor of the fibre-optic line-stretcher and fibre-optic line-squeezer phase modulators that are now important components in FOSS (Fibre Optic Sensor Systems). As early as 1975, speculated that optical fibres might find application as strain, pressure and temperature sensors.

Devising research projects in fibre-optic/integrated-optic sensing, distributed fibre-optic sensing, fibre-optic/integrated-optic communications, and chirped laser-diode ranging systems, marketing projects, writing proposals/reports, supervising and managing research work. Optoelectronics fibre-optic sensing consultant. Investigated the health aspects of lighting and VDU flicker, possible workstation health hazard, and domestic environmental magnetic-field hazards. A photonics systems analysis of an optical approach to the Search For Extraterrestrial Intelligence (SETI) has been completed. The results of this study indicate that the SETI community may have been misguided in assuming for the past 30 years, that the microwave water-hole near the 21-cm hydrogen line is the best place to search for Alien communications. Chairman for SPIE's Optical SETI I, II and III conferences (1993, 1996 & 2001). Former editorial board member of SETIQuest. Former non-voting member of the Bexley Technology Commission (BTC). Former Technology Director, Crag Head Managements.

Positions:

International Consultant (former Chief Scientist and VP of Engineering) at SRICO, Inc. where he was involved in photonic electric field sensing, voltage sensing, non-contact and dry-contact physiological sensing, low-noise (Noise Figures of a few dB) wide dynamic range fibre optic links, wideband (18+ GHz) analog fibre optic links, and Dense Wavelength Division Multiplex (DWDM) systems. All these technologies are based on lithium niobate Mach-Zehnder Intensity (MZI) modulators. Also involved with ultra-high extinction ratio modulators and Periodically-Poled Lithium Niobate (PPLN) wavelength converters. President of Fibredyne Optoelectronics, a photonics consultancy company. Presently consulting on fibre optic sensing arrays for use in seismic sensing in the oil-exploration industry, based on technology first described in publications 1-5 below. Director of the former The Columbus Optical SETI Observatory (ETI Photonics) and the future Bournemouth Optical SETI Observatory. Former board member of the Laser Museum & Space Signal Observatory (LSSO). Former chairman of The SETI League's Optical SETI Committee.

February 2010: Resumed position as Chief Scientist at SRICO, Inc., but working part-time from the United Kingdom on a DARPA program to develop highly-sensitive, miniaturised, Photonic-Band Gap, thin film lithium niobate (TFLN) E-Field sensors.

Publications Summary:

Author of over 60 papers in fibre and integrated optics, mainly related to coherent fibre-optic systems and distributed fibre-optic sensing. Eleven patents in the area of fibre/integrated optic sensing and optical modulation.

Professional Recognition and Affiliations:

Winner of the Barlow Prize for innovative research (1975), University College London. Presented with the prestigious 1984 Rank Prize for Optoelectronics (shared with Professor D.E.N. Davies) which was given for a major contribution to fibre-optic sensing technology. 1996 R&D 100 Award as a co-inventor of SRICO's E-field sensor. 2000 NASA Technical Briefs Award. 2000 Giordano Bruno Memorial Award for pioneering efforts in the search for laser signals from space. SRICO 1996 R&D 100 Award (Photonic Electric Field Sensor IPES-2001), SRICO 2002 R&D 100 Award (Photrodes for Electrophysiological Monitoring). Member, The Institution of Engineering and Technology (IET, formerly known as the IEE). British Chartered Engineer. Senior Member, Institute of Electrical and Electronics Engineers. Member, Eta Kappa Nu Association.

Affiliations to Space, SETI and Astronomy Organizations:

The Planetary Society (TPS)

Publications and Presentations:

Davies, D.E.N. and Kingsley, S.A., "Method of phase-modulating signals in optical fibres: application to optical-telemetry systems", Electronics Letters, 24 January 1974, Vol. 10, No. 2, pp. 21-22.* Davies, D.E.N. and Kingsley, S.A., "A novel optical fibre telemetry highway", Presented at the 1st European Conference on Optical Fibre Communication, 16-18 September 1975, London, England, IEE Conference Publication No. 132, pp. 165-167. Kingsley, S.A., "Optical-fibre phase modulator", Electronics Letters, 18 September 1975, Vol.11, No. 19, pp. 453-454. Davies, D.E.N. and Kingsley, S. A., "An optical fibre data collection highway", Proceedings of Electro-Optics/Laser International '76 UK, Brighton, England, 9-11 March 1976, pp. 64-72. Kingsley, S.A. and Davies, D.E.N., "Use of optical fibres as instrumentation transducers", Digest of Technical Papers, Conference on Laser and Electrooptical Systems (CLEOS), 25-27 May 1976, San Diego, U.S.A., pp. 24-25. Culshaw, B., Davies, D.E.N. and Kingsley, S.A., "Acoustic sensitivity of opticalfibre waveguides", Electronics Letters, 8 December 1977, Vol. 13, No. 25, pp. 760-761. Kingsley, S.A. and Davies, D.E.N., "Multimode optical-fibre phase modulators and discriminators: I-Theory", Electronics Letters, 25 May 1978, Vol. 14, No. 11, pp. 322-324. Kingsley, S.A., "Multimode optical-fibre phase modulators and discriminators: II-Experiments", Electronics Letters, 25 May 1978, Vol. 14, No. 11, pp. 355-337. Kingsley, S.A., "Fibredyne systems for passive or semipassive fibre-optic sensors", Electronics Letters, 6 July 1978, Vol. 14, No. 14, pp. 419-422. Kingsley, S.A., Culshaw, B., Davies, D.E.N. and Hall, T.J., Fibre-optic 10. microphones and hydrophones: a comparison with conventional devices", Proceedings of the International Optical Computing Conference (IOCC-78), 5-7 September 1978, London, England, pp. 67-74. Kingsley, S.A., Davies, D.E.N., Culshaw, B. and Howard, D., "Fibredyne 11. systems", Proceedings of Fibre Optic Communications (FOC '78), 6-8 September 1978, Chicago, U.S.A., pp. 152-158. Culshaw, B., Davies, D.E.N. and Kingsley, S.A., "Fibre-optic strain, pressure and 12. temperature sensors", Proceedings of the 4th European Conference on Optical Communication (4th ECOC), 12-15 September 1978, Genoa, Italy, pp. 115-126.

- 13. Kingsley, S.A., "Measurement of the pressure sensitivity of single-mode optical-fibre phase modulators", Microwaves, Optics and Acoustics, Vol. 2, No. 6, November 1978, pp. 204-208.
- 14. Culshaw, B., Fiddy, M.A., Hall, T.J. and Kingsley, S.A., "Fibre optic acoustic sensors", Proceedings of Ultrasonics '79, Graz, Austria, 15-17 May 1979, pp. 267-272.
- 15. Culshaw, B. and Kingsley, S.A., "Thermal phase noise in coherent optical fibre systems", Electronics Letters, 31 January 1980, Vol. 16, No.3, pp. 97-99.
- 16. Ball, P.R., Culshaw, B., Davies, D.E.N., Hall, T.J. and Kingsley, S.A., "Fibreoptics and some coherent applications", Digest of Technical Papers, Conference on Laser and Electrooptical Systems (CLEOS/ICF '80), 26-28 February 1980, San Diego, U.S.A., p. 66.
- 17. Ball, P.R., Culshaw, B. and Kingsley, S.A., "Recovery of phase modulated signals in multimode optical fibres", Proceedings of the International Optical Computing Conference (IOCC '80), Washington D.C., U.S.A., 7-11 April 1980.
- 18. Culshaw, B., Davies, D.E.N. and Kingsley, S.A., "Multimode optical fibre sensors", Proceedings of the American Ceramic Society (Annual Meeting), Advances in Ceramics, Physics of Fibre Optics, Vol. 2, Chicago, U.S.A., 27-30 April 1980, pp. 515-528.
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- Kingsley, S.A., Davies, D.E.N. and Culshaw, B., "Coherent fibre optics",
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 September 1980.
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- 22. Kingsley, S.A., "Fiber-optic interferometric signal processor employing a differentiate and cross-multiply frequency discriminator", First International Conference on Fiber Optic Sensors, 26-28 April 1983, London, England, IEE Conference Publication No. 221, pp. 205-209.
- 23. Kingsley, S.A. and Boiarski, A., "Differential doppler velocimetry using polarization-preserving optical fiber", First International Conference on Fiber Optic Sensors, 26-28 April 1984, London, England, IEE Conference Publication No. 221, pp. 214-216.

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- 25. Kingsley, S.A., "Distributed fiber-optic sensors", Proceedings of the 1984 ISA Show, 22-25 October 1984, Houston, Texas, U.S.A., pp. 315-330.
- 26. Kingsley, S.A. and Davies, D.E.N., "OFDR diagnostics for fiber and integrated-optic systems", Electronics Letters, 9 May 1985, Vol. 21, No. 10, pp. 434-435.
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- 29. Kingsley, S.A. and Davies, D.E.N., "OFDR diagnostics for fiber/integrated optic systems and high resolution distributed fiber optic sensing", Proc. of SPIE's 29th Annual International Technical Symposium, San Diego, California, 18-23 August 1985, Vol. 566, Fiber Optic & Laser Sensors III, pp. 265-275.
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- 31. Kingsley, S.A., and Harmer, A., "Fiber optic sensors and their potential in industry", Battelle Technical Inputs To Planning, Report No. 48, August 1986.
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- 33. Kingsley, S.A., and McGinniss, V.D., "Distributed fiber-optic hot-spot sensors", Proc. of SPIE's 30th Technical Symposium, Fiber/Laser '86, Fiber Optic & Laser Sensors IV, Vol. 718, Cambridge, Massachusetts, September 22-24, 1986, pp. 218-224. ***
- 34. Kingsley, S.A., and Kuhner, M.B., "Range image acquisition: a progress report", Proc. of the United States Postal Service Advanced Technology Conference, Washington D.C., October 21-23, 1986, pp. 278-303.
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- 39. Kurmer, J.P., Kingsley, S.A., Laudo, J.S., and Krak, S.J., "Applicability of a novel distributed fiber optic acoustic sensor for leak detection", Proc. of SPIE's 1992 Boston Symposium, OE/FIBERS '92, Vol. 1797, Boston, Massachusetts, September 7-11, 1992.
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- 44. Kingsley, S.A., Sriram, S., Boyd, J.T., Naghski, D.H., and Latess, J., "Photonic electrode-less passive electric field sensor", Conference on Precision Electromagnetic Measurements, Boulder, Colorado, June 27-July 1, 1994.
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- 47. Kingsley, S.A., and Sriram, S., "Parallel Plate Integrated-Optic High-Voltage Sensor", Electronics Letters, 22nd June 1995, Vol. 31, No. 13, pp. 1096-1097.
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- 50. Kingsley, S.A., "A prototype Optical SETI observatory", Proc. of SPIE's 1996 Symposium on Lasers and Integrated Optoelectronics, Vol. 2704, Search for Extraterrestrial Intelligence (SETI) in the Optical Spectrum II, San Jose, California, January 27-February 2, 1996.#
- 51. Kingsley, S.A., and Lemarchand, G. (Editors), "Proc. of SPIE's 1996 Symposium on Lasers and Integrated Optoelectronics, Vol. 2704, Search for Extraterrestrial Intelligence (SETI) in the Optical Spectrum II, San Jose, California, January 27-February 2, 1996.#
- 52. Latess, J., Sriram. S., and Kingsley, S.A., "High-Power, Integrated Photonic, Electric Field Sensor", Proceedings of the 1997 Sensors and Electron Devices Symposium, University of Maryland, January 14-15, 1997, pp. 311-314.
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- Kingsley, S.A., "Optical SETI Observatories in the New Millennium: A Review",
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- 60. Kingsley, S.A., et al, "Photrodes™ for physiological sensing," SPIE Biomedical Optics 2004, San Jose, CA, January 2004.
- 61. Kingsley, S.A., et al, "Sensitivity enhancements to photonic electric field sensor," SPIE Defense & Security Symposium, Orlando, FL, 12-16 April 2004.
- 62. Kingsley, S.A., et al, "Revolutionary optical sensor for physiological monitoring in the battlefield," SPIE Defense & Security Conference, Orlando, FL, 12-16, April 2004.
- 63. Kingsley, S.A., et al, "Linearized Electro-Optic Directional Coupler Modulator in Stoichiometric Lithium Niobate," SPIE Photonics for Space Environments IX, Symposium AM04, SPIE Optical Science and Technology 49th Annual Meeting, Denver, CO, 2-6 August 2004.
- 64. Powers, P.E., Sriram, S., and Kingsley, S.A., "Nonlinear optical frequency conversion applied to remote sensing receiver systems," SPIE Conference on Nonlinear Frequency Generation and Conversion: Materials, Devices, and Applications IV, San Jose, CA, 2005.
- 65. Kingsley, S.A., Sriram, S, and Powers, P.E., "High-sensitivity 3 to 5 micron PPLN LADAR wavelength converter system," Laser Radar Technology and Applications X,Proc. SPIE, Vol. 5791, pp. 262-272, 2005.
- 66. Kingsley, S.A., et al, "Ultra high dynamic range optical intensity modulators for LADAR simulator scene generators," SPIE Defense & Security Symposium, Orlando, FL, 28 March 1 April 2005.
- 67. Ross, M. and Kingsley, S.A., "Optical SETI: moving toward the light" in Searching for Extraterrestrial Intelligence SETI Past, Present and Future, H. Paul Shuch (Editor), Chapter 10, Praxis Publishing, The Frontiers Collection, pp. 147-182, 2011.

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Patents:

	Patent Number	Date	Description	Company
1	DE2335589	January 31, 1974	Kingsley, S.A., "Mit Hoeheren Frequenzen Arbeitende Entladungslampe".	Thorn Electrical Industries
2	US4,002,896	January 11, 1977	Davies, D.E.N., Kingsley, S.A., "Telecommunication system".	NRDC (UCL)
	GB1,488,253	October 12, 1977	Davies, D.E.N., Kingsley, S.A., "Telecommunication system".	NRDC (UCL)
3	US4,236,243	November 25, 1980	Davies, D.E.N., Kingsley, S.A., "Telecommunication systems".	NRDC (UCL)
4	US4,319,186	March 9, 1982	Kingsley, S.A., "Signal sensors".	NRDC (UCL)
5	US4,408,354	October 4, 1983	Culshaw, B., Ball, P., Kingsley, S.A., Davies, D.E.N., "Signal transmission systems".	NRDC (UCL)
6	US5,052,820	October 1, 1991	McGinniss, V.D., Whitmore, Jr. R. S., Kingsley, S.A. "Thermal refractive materials for optical sensor application".	Battelle Columbus Laboratories
7	US5,267,336	November 30, 1993	Sriram, S., Kingsley, S.A., Boyd, J.T., "Electro-optical sensor for detecting electric fields".	SRICO, Inc.
8	US6,479,979	November 12, 2002	Kingsley, S.A., Sriram, S., Kleefstra, M., "Opto-electric device for measuring the root-mean-square value of an alternating current voltage".	SRICO, Inc.
9	US6,600,843	July 29, 2003	Sriram, S., Kingsley, S.A., "Optical modulator".	SRICO, Inc.
10	US6,724,179	April 20, 2004	Kingsley, S.A., Sriram, S., Kleefstra, M., "Opto-electric device for measuring the root-mean-square value of an alternating voltage".	SRICO, Inc.
11	US6,871,084	March 22, 2005	Kingsley, S.A., Sriram, S., Boiarski, A., Gants, N., "High-impedance optical electrode".	SRICO, Inc.
12	US7,447,534	November 4, 2008	Kingsley, S.A., Sriram, S., Boiarski, A., Gants, N., "Method and apparatus for measuring electrophysiological activity".	SRICO, Inc.

For more information on Optical SETI and The Columbus Optical SETI Observatory see:

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THE COLUMBUS DISPATCH, April 7, 2000, pp. 1A-2A.

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ASTRONOMY NOW, December 2000, pp. 22-24.

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TIMES HIGHER EDUCATION SUPPLEMENT, December 22-29, 2000, p. 14.

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ASTRONOMY, September 2002, pp. 44-49.

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(a front-page Goodbye Columbus - farewell to Stuart).

THE SEARCH FOR EXTRATERRESTRIALS – Intercepting Alien Signals, Monte Ross, Praxis Publishing, 2009.

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