

Curriculum Vitae

Professor Colin J.R. Sheppard

Nanoscopy and Nikon Centre

IIT, Italian Institute of Technology

Via Morego, 30 16163 Genova, Italy

Tel: +39 010 71781 804

Email: colinjrsheppard@gmail.com

Education

MA and PhD degrees in Engineering from University of Cambridge (1972 and 1973)

DSc in Physical Sciences from the University of Oxford (1986).

Work experiences

2012- Current, Senior Scientist at the Italian Institute of Technology, Genoa, Italy

Professor in the Department of Bioengineering and Faculty of Engineering for National University of Singapore (2003-2012).

Professor in Departments of Biological Sciences (Faculty of Science) and Diagnostic Radiology (School of Medicine) (2003-2012).

SMART (Singapore/MIT Alliance for Research & Technology) Faculty Fellow, and Adjunct Research Staff at SERI (Singapore Eye Research Institute) (2003-2012).

Professor of Physics at the University of Sydney (1989–2003), and Research Director of the Australian Key Centre for Microscopy & Microanalysis (1995–2001).

University Lecturer in Engineering Science at Oxford University (1979–89).

Research areas:

His areas of research are in optics, microscopy and imaging, including confocal and multiphoton microscopy, diffraction, 3D imaging and reconstruction, superresolution, beam propagation, and pulse propagation.

Professional experiences

Science & Engineering Research Council Advanced Fellowship (1974-6)

He has served as vice-president of the International Commission for Optics(ICO), President of the International Society for Optics Within Life Sciences (OWLS), Editor-in-Chief of Journal of Optics A: Pure and Applied Optics, and Editor of Advances in Optical & Electron Microscopy (Academic Press).

Awards

Alexander von Humboldt Research Award (at the Max Planck Institute for the Science of Light, Erlangen (Germany))

The Institute of Physics Optics and Photonics Division Prize

National Physical Laboratory Metrology Award

British Technology Group Academic Enterprise Award

Institution of Electrical Engineers Gyr and Landis Prize

A commendation in the Prince of Wales Award for Industrial Innovation & Production.

Publications:

Aguilar, J. F., Lera, M., & Sheppard, C. J. R. (2000). Imaging of spheres and surface profiling by confocal microscopy. APPLIED OPTICS, 39(25), 4621–4628. <http://doi.org/10.1364/AO.39.004621>

Aguilar, J. F., & Sheppard, C. J. R. (1999). Limitations of the confocal imaging algorithm in surface profiling. In 18TH CONGRESS OF THE INTERNATIONAL COMMISSION FOR OPTICS: OPTICS FOR THE NEXT MILLENNIUM, TECHNICAL DIGEST (Vol. 3749, pp. 490–491). <http://doi.org/10.1117/12.354848>

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Asatryan, A. A., Sheppard, C. J. R., & de Sterke, C. M. (2004). Vector treatment of second-harmonic generation produced by tightly focused vignetted Gaussian beams. JOURNAL OF THE OPTICAL SOCIETY OF AMERICA B-OPTICAL PHYSICS, 21(12), 2206–2212. <http://doi.org/10.1364/JOSAB.21.002206>

Balla, N. K., Sheppard, C. J. R., & So, P. T. C. (2011). Multiphoton luminescence of gold nanorods upon excitation with wavelengths away from their absorption maxima. In Achilefu, S and Raghavachari, R (Ed.), REPORTERS, MARKERS, DYES, NANOPARTICLES, AND MOLECULAR PROBES FOR BIOMEDICAL APPLICATIONS III (Vol. 7910). <http://doi.org/10.1117/12.876014>

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- Balla, N. K., Yew, E. Y. S., Sheppard, C. J. R., & So, P. T. C. (2012). Coupled and uncoupled dipole models of nonlinear scattering. *OPTICS EXPRESS*, 20(23), 25834–25842. <http://doi.org/10.1364/OE.20.025834>
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- Campos, J., Escalera, J. C., Sheppard, C. J. R., & Yzuel, M. J. (2000). Axially invariant pupil filters. *JOURNAL OF MODERN OPTICS*, 47(1), 57–68. <http://doi.org/10.1080/09500340008231405>
- Castello, M., Sheppard, C. J. R., Diaspro, A., & Vicidomini, G. (2015). Image scanning microscopy with a quadrant detector. *OPTICS LETTERS*, 40(22), 5355–5358. <http://doi.org/10.1364/OL.40.005355>
- Chen, N. G., Wong, C. H., Chong, S. P., & Sheppard, C. J. R. (2010). Real time focal modulation microscopy. In Conchello, JA and Cogswell, CJ and Wilson, T and Brown, TG (Ed.), *THREE-DIMENSIONAL AND MULTIDIMENSIONAL MICROSCOPY: IMAGE ACQUISITION AND PROCESSING XVII* (Vol. 7570). <http://doi.org/10.1117/12.841511>
- Chen, N., Rehman, S., & Sheppard, C. J. R. (2014). Advanced optical microscopy methods for in vivo imaging of sub-cellular structures in thick biological tissues. *JOURNAL OF INNOVATIVE OPTICAL HEALTH SCIENCES*, 7(5). <http://doi.org/10.1142/S179354581440001X>
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- Chen, R., Agarwal, K., Sheppard, C. J. R., Phang, J. C. H., & Chen, X. (2013). A complete and computationally efficient numerical model of aplanatic solid immersion lens scanning microscope. *OPTICS EXPRESS*, 21(12), 14316–14330. <http://doi.org/10.1364/OE.21.014316>
- Chen, R., Agarwal, K., Sheppard, C. J. R., Phang, J. C. H., & Chen, X. (2012). Resolution of aplanatic solid immersion lens based microscopy. *JOURNAL OF THE OPTICAL SOCIETY OF AMERICA A-OPTICS IMAGE SCIENCE AND VISION*, 29(6), 1059–1070.
- Chen, R., Agarwal, K., Zhong, Y., Sheppard, C. J. R., Phang, J. C. H., & Chen, X. (2012). Complete modeling of subsurface microscopy system based on aplanatic solid immersion lens. *JOURNAL OF THE OPTICAL SOCIETY OF AMERICA A-OPTICS IMAGE SCIENCE AND VISION*, 29(11), 2350–2359.

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Chen, W., Chen, X., & Sheppard, C. J. R. (2011). Optical double-image cryptography based on diffractive imaging with a laterally-translated phase grating. *APPLIED OPTICS*, 50(29), 5750–5757. <http://doi.org/10.1364/AO.50.005750>

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GAN, X., MIN, G., & SHEPPARD, C. J. R. (1992). FLUORESCENT IMAGE-FORMATION IN THE FIBEROPTIC CONFOCAL SCANNING MICROSCOPE. JOURNAL OF MODERN OPTICS, 39(4), 825–834. <http://doi.org/10.1080/09500349214550821>

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Goh, S. H., & Sheppard, C. J. R. (2009). High aperture focusing through a spherical interface: Application to refractive solid immersion lens (RSIL) for subsurface imaging. OPTICS COMMUNICATIONS, 282(5), 1036–1041. <http://doi.org/10.1016/j.optcom.2008.11.032>

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Gong, W., Si, K., & Sheppard, C. J. R. (2010). Divided-aperture technique for fluorescence confocal microscopy through scattering media. *APPLIED OPTICS*, 49(4), 752–757.
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