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Colin Sheppard is Honorary Professorial Fellow at the University of Wollongong, Australia, and also an External Collaborator and Visiting Scientist with the Italian Institute of Technology, Genoa, Italy. Previously he has been Professor and Head in the Department of Bioengineering at National University of Singapore; Professor of Physics at the University of Sydney; and University Lecturer in Engineering Science at the University of Oxford. He obtained his PhD degree from University of Cambridge. He has held visiting positions at many different institutions, including UC-Berkeley, MIT, EPFL, TU-Delft and Tokyo University. He developed an early laser microscope (1975), patented scanning microscopy using Bessel beams (1977), published the first implementation of scanning two-photon microscopy (SHG) (1977), proposed two-photon fluorescence and CARS microscopy (1978), launched the first commercial confocal microscope (1982), and developed the first confocal microscope with computer control and storage (1983).

ABSTRACT

Image scanning microscopy: the new confocal microscope

Image scanning microscopy (ISM) is a variant of confocal microscopy in which the detector and pinhole of the confocal microscope are replaced by a detector array. As a result, the major disadvantage of confocal microscopy, that the pinhole throws away much of the available light, reducing signal level and the potential for resolution improvement, is avoided. ISM thus allows the resolution to be improved, relative to a conventional microscope, while maintaining a strong signal and retaining the optical sectioning property.

