



Judith Dawes

MQ Photonics Research Centre,

Department of Physics and Astronomy, Macquarie University, Sydney, 2109 NSW Australia

Judith Dawes is Professor of Physics at Macquarie University and Director of MQ Photonics Research Centre. She is Treasurer for Science and Technology Australia and she is a former President of the Australian Optical Society. She is active in promoting Women in STEM and is a Fellow of SPIE and OSA, major international Optics societies.

With experience in laser applications in medicine and dentistry, she applies nanotechnology for medical diagnostics and sensing. Her achievements include the invention of a new laser crystal, and the invention of a laser-cured protein solder for microsurgery.

Principles of Light Propagation

The talk will review light propagation in different media, including the phenomena of scattering, absorption, and transmission and reflection at surfaces, and how these are measured in practice. The Beer-Lambert Law for light propagation in various media will be explained. Light absorption by chromophores in tissues leads to photothermal, photomechanical, photochemical and photo-biomodulation effects. Light propagation in optical fibres and waveguides will also be discussed.

Take home message:

An understanding of the principles of light propagation in tissues is important to enable practitioners to optimise their use of lasers for clinical treatment.