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Frédérique Vanholsbeeck is a senior lecturer and head of the biophotonics group at the Department of Physics at the University of Auckland, with research interests in biomedical imaging, particularly optical coherence tomography (OCT) and spectroscopic fluorescence. Her research spans both fundamental and applied aspects with application in medicine and the food industry. She is a member of the executive committee of the Dodd Walls centre for photonics and quantum technologies and a councillor of the Australian Optical Society. Polarisation and chromatic dispersion to detect early signs of non-communicable diseases using optical coherence tomography (OCT).

ABSTRACT

OCT is a non-invasive imaging technique based on low coherence interferometry that provides high resolution 3D images of samples with a depth range of a few mm. We have been using OCT as optical biopsies with a particular focus on detection of early signs of non-communicable diseases. We have been amongst the pioneers in recognising chromatic dispersion as a tool for functional OCT *[1,2]*. We have now developed a complete understanding of chromatic dispersion as a functional addition to OCT systems *[3]*. In addition, we have been working on polarisation sensitive OCT (PS-OCT) to detect early signs of osteoarthritis *[4]*. During this talk, I will present some of our recent results on these topics.

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[3] Kolenderska S., Bräuer B., and Vanholsbeeck F. "Dispersion mapping as a simple postprocessing step for Fourier domain Optical Coherence Tomography data" arXiv:1708.04037 (2017) http://arxiv.org/abs/1708.04037 Submitted to Scientific Reports

[4] Kolenderska S., Bräuer B., and Vanholsbeeck F. "Dispersion mapping as a simple postprocessing step for Fourier domain Optical Coherence Tomography data" arXiv:1708.04037 (2017) http://arxiv.org/abs/1708.04037 Submitted to Scientific Reports