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High speed simultaneous optical and impedance measurements of single bio-particles NICOLAS GREEN, HYWEL MORGAN, DAVID HOLMES, University of Southampton — We have developed a new method for the rapid detection of single bio-particles flowing in a micro-channel. Confocal optical detection has been combined with multi-frequency impedance based detection to allow measurements of single bio-particles. The optical detection setup is based around a high numerical aperture microscope objective with free space optical elements allowing dual wavelength excitation and three colour optical detection. The electrical impedance was measured using micro-electrodes integrated into the channel. Fluorescently labelled latex beads and human blood conjugated with CD+ antibodies have been measured with the device. The ability of the technique to correlate both optical and impedance data from individual particles passing through a detection region has applications in many fields, including micro and nanotechnology.

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