



Optical Coherence Tomography Rheometer

THE UNIVERSITY OF MANCHESTER

The University of Manchester formed from the merger of Victoria University of Manchester and UMIST, in 2004, to create the largest single-site university in the UK. Parts of the university can be traced back to 1824 with the formation of the Manchester Mechanics' Institution. Twenty-five Nobel Prize winners have worked or studied at the University of Manchester, including Ernst Rutherford (1908), Arthur Lewis (1979), and Andre Geim and Kostya Novoselov (2010); and many of the university's achievements and discoveries have shaped the history of the modern world - from the splitting of the atom to the first stored-program computer.

Members of the University's 'Biological Physics' research group have developed a novel Optical Coherence Tomography Rheometer that allows the velocity of opaque flowing materials to be measured in situ in well controlled stress/strain fields.

BACKGROUND

The field of rheometry considers the instrumentation involved in the scientific study of the flow behaviour of materials. A rheometer is a scientific instrument for measuring the rheology of a material. The rheometer creates a well-defined stress field in the material and measures the resultant stress or vice versa. The response of the material to the stress or strain fields provides an accurate measurement of its viscoelasticity i.e. the degree to which a material is viscous or elastic (all real materials are intermediate between the two ideal responses). We describe a new instrument that allows the velocity of a flowing material to be measured in situ in a rheometer which has a series of advantages over the other methods that already exist in the field.

THE TECHNOLOGY

Optical coherence tomography is a modern optical detection technique that has found wide use in biomedical applications. The Optical Coherence Tomography Rheometer allows velocity measurement of a sample whilst a known stress and/or strain field is applied to the sample. The technology determines a velocity of a sample whilst a force is applied to the sample by Doppler shift optical coherence tomography (OCT).

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KEY BENEFITS

- Granted patent in UK. (GB 2482908)
- Allows the velocity of opaque flowing materials to be measured in situ in well controlled stress/strain fields.
- It is non-invasive at infra-red wavelengths.

All intellectual property is wholly owned by The University of Manchester

UMIP

UMIP - The University of Manchester Intellectual Property (IP) - is the technology transfer office of the University. In the last nine years, the University's spin-out businesses have attracted over £225M of funding, whilst its intellectual property has been successfully licensed to multi-national companies and local business alike.

OPPORTUNITY

UMIP is seeking partners to develop and commercialise this technology via appropriate licences. Please see our video about this technology here:

<https://www.youtube.com/watch?v=5jXSnpqguZU>

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