



**HIGH SHEAR RHEOMETRY OF NANO-FILLED POLYMER SYSTEMS FOR MICRO-INJECTION
MOULDING**

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Micromoulding and thin-walled injection moulding processes typically subject the polymer melt to shear rates in excess of 10^6s^{-1} , which is several orders of magnitude higher than those seen in conventional polymer processes and outside the range of standard material characterisation techniques such as capillary rheometry. A novel high shear rheometry system has been developed at the University of Bradford which is able to characterise materials in excess of 10^7s^{-1} where interesting behaviour is observed. The power law behaviour of apparent viscosity curves is seen to be disturbed in the higher shear rate range and an inflection point occurs, beyond which the melt viscosity appears to increase rapidly. This paper presents results recorded during an investigation of the onset of this phenomenon for a range of polymers, over a range of temperatures and levels of nano filler in carbon nano tube (CNT) nano-composite systems.