

# Front Microrheology of Biological Fluids

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We present a study of front microrheology through the development of a microfluidic device and method that describes accurately the non-linear rheology of blood, by means of a simple optical detection method based on tracking the fluid-air interface moving inside a microchannel. We study the behavior of Newtonian fluids of different viscosities and densities, as well, we performed measures for blood at different red blood cells concentration and at different days from its extraction. We have developed a scaling method which allows us to determine a relation between the red blood cell properties at different days from its extraction, according to the aggregation properties of red blood cell. Our results have been compared with theoretical and bibliographical results, which shows reliable results with an error around 6%. In general, our device and method is useful as a viscometer and rheometer, as well as, it enables to establish a relation between blood viscosity and its red blood cells characteristics. © Published under licence by IOP Publishing Ltd.