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Influence of Relative Humidity on the Spreading Dynamics of a Drying Drop of Whole Blood WASSIM BOU ZEID, DAVID BRUTIN, Aix-Marseille University — Newtonian and non-Newtonian fluids start spreading after coming into contact with a solid substrate till the anchoring of the triple line. Our experimental work aims to study the effect of the relative humidity on the spreading dynamics of drops of whole blood. Drops of blood of same volume (+/- 4.8 %) are injected using a digital micropipette and gently deposited onto microscope ultraclean glass substrates. Experiments are conducted in a glove box at ambient temperature and a range of investigated relative humidities between 13.0% and 80.0%. The recorded images are post-processed using ImageJ in which the position of the contact line is measured every 20 ms. We show that the spreading dynamics is, in a first time, governed by relative humidity and later no more influence by relative humidity. Two spreading regimes are observed and analyzed compared to classical viscous drops. In previous work, we show that relative humidity influences the contact angle and the initial wetting radius. In the first regime, we find a spreading power law exponent that decreases for an increasing relative humidity. In the second regime, all the data collapse on each other and the evolution of the dimensionless radius no more depend on relative humidity.

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