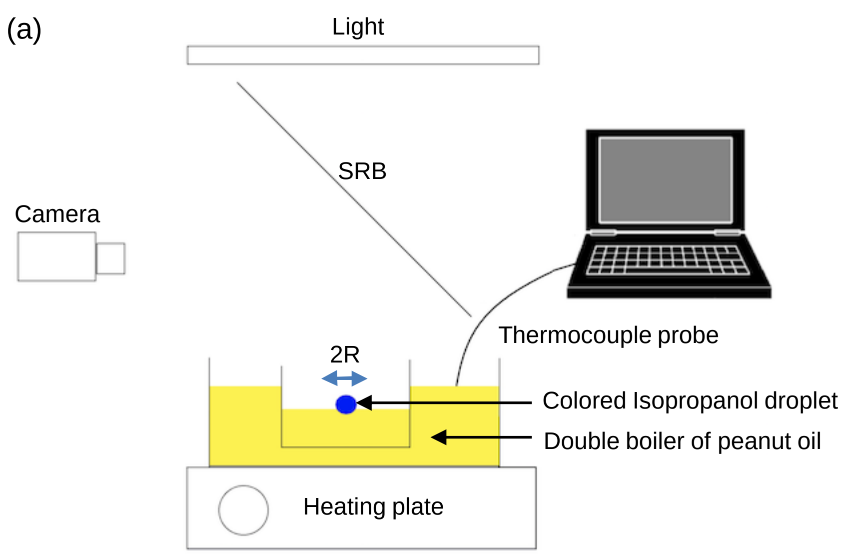
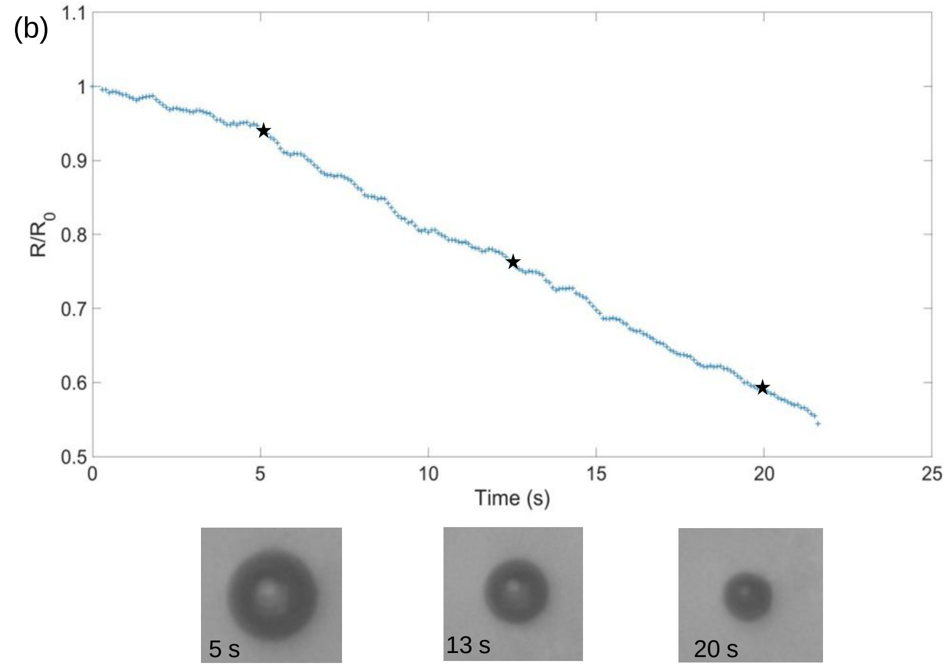




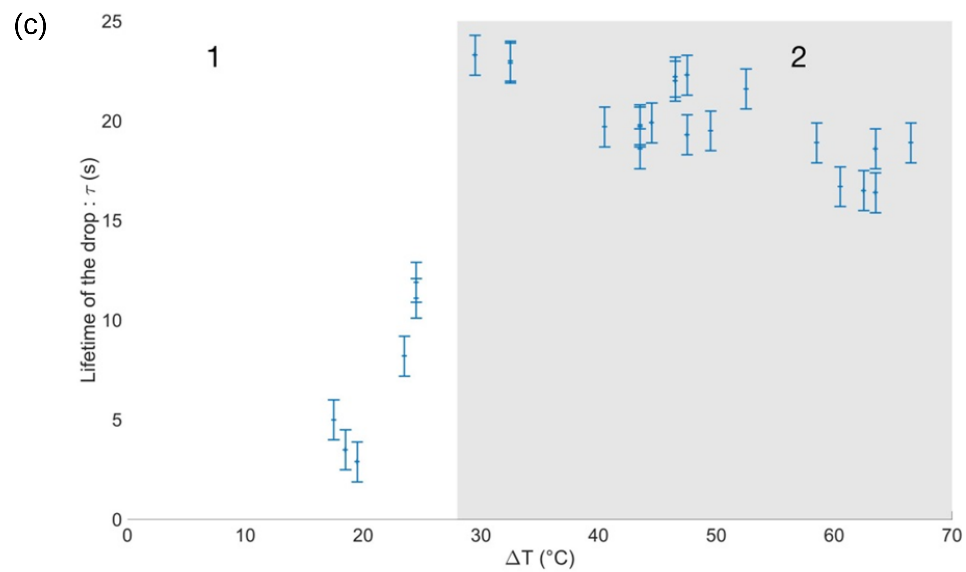
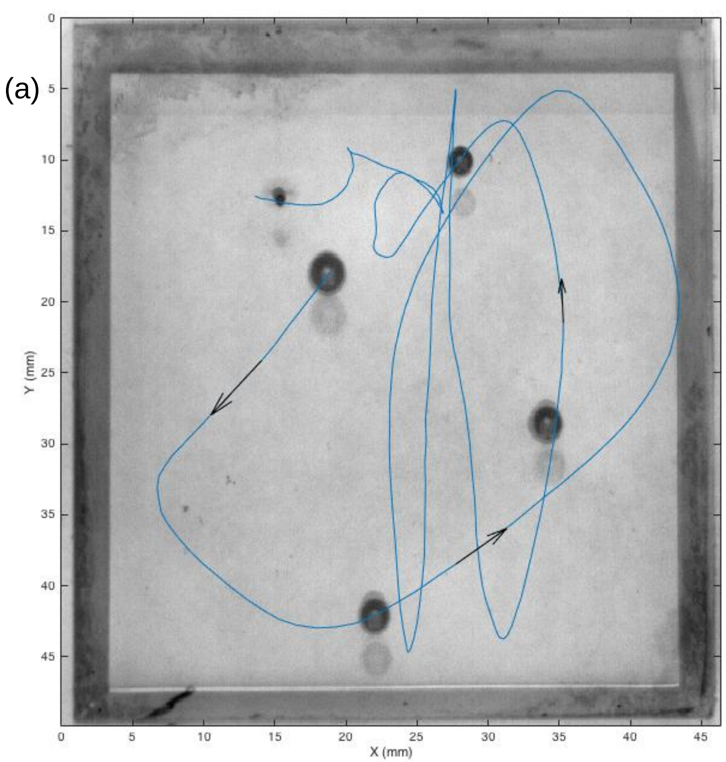
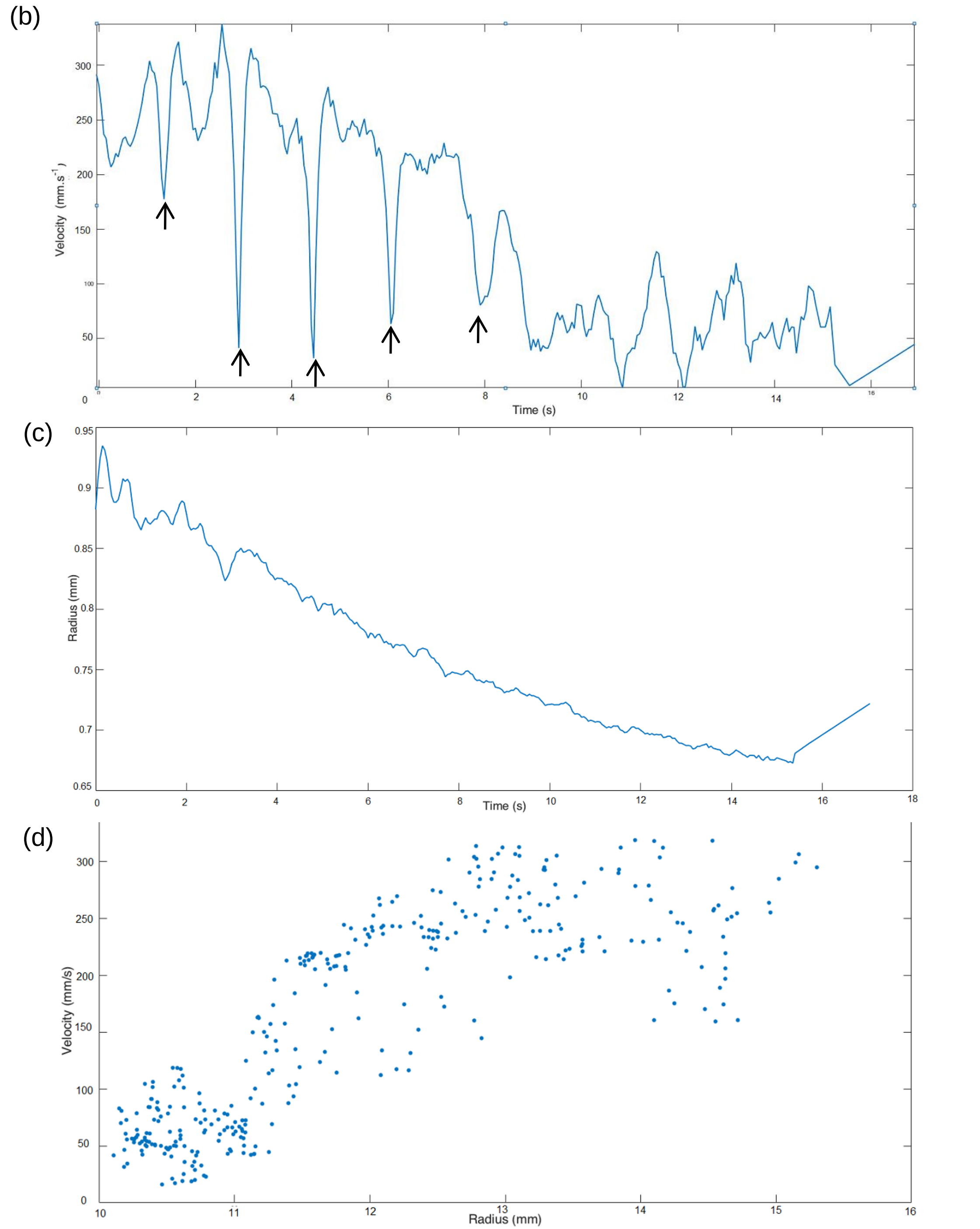
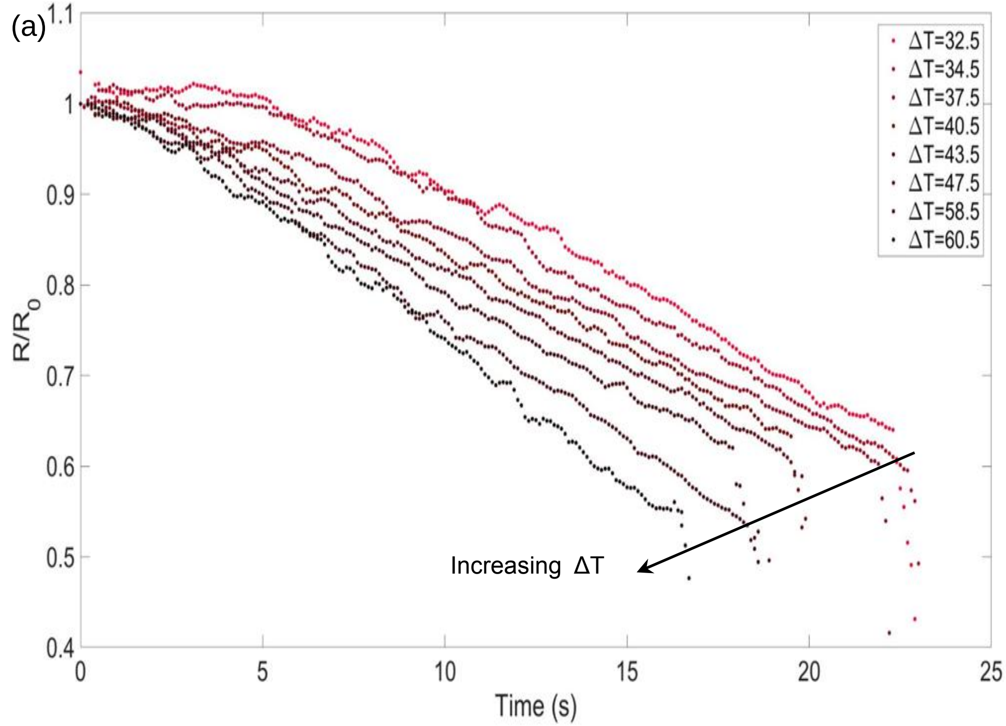


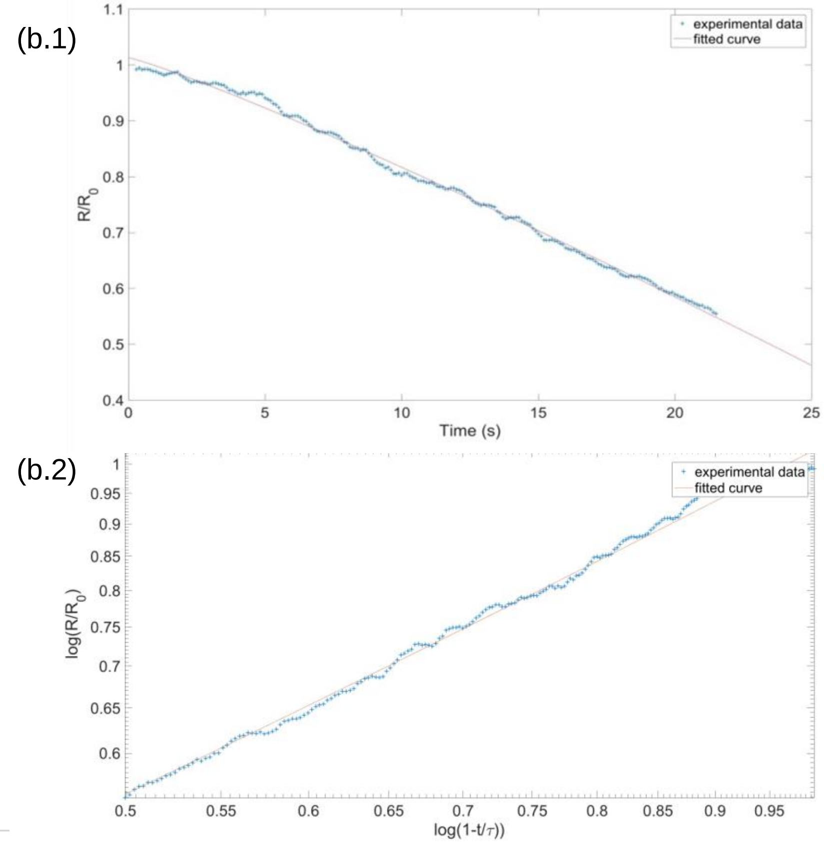
FIG. 1. Evolution of the droplet lifetime on the bath with temperature. Measure of isopropanol droplet lifetime on a hot liquid oil surface at different temperatures $T = T_{boiling} + \Delta T$ with $T_{boiling}$ = 82.5°C. The temperatures were measured with a thermocouple and the lifetime was measured by analyzing an image sequence. **(a)** Experimental setup : heating plate, crystallizer and LED lamp (SRB : Semi-Reflective Blade ; R refers to the measured radius of the drop). When studying the reflection on walls **(FIG. 2.)**, the droplet was deposited into a squared bath whereas a circular bath was used for the characterization of the static phase **(FIG. 3.)** and for this study of the droplet lifetime. **(b)** Evolution of the ratio of the drop's radius R over this radius at the deposition on the bath R_0. The temperature of the bath was 135°C (ΔT of 52.5°C). Different states of the drop are shown by the pictures below the graph : the stars indicate the time these pictures were taken. **(c)** Evolution of the droplet lifetime with ΔT. Two phases are identifiable : a dynamic phase (1) at ΔT ∈ [18°C ; 28°C] caracterized by $\tau < 15$s ; and a stationnary phase (2) at ΔT ∈ [28°C ; 70°C] caracterized by $\tau > 20$s ; $T_{threshold}$ = 28°C.

FIG. 2. Characterisation of the dynamic phase of an isopropanol droplet on a hot oil bath at $T < T_{threshold}$. Determination of the radius evolution of isopropanol droplets, that were placed into a 48mm side square, for different temperatures. **(a)** Superposition of a typical image analyzed and the corresponding droplet trajectory at ΔT = 26°C. **(b)** Study of the shocks dynamic of droplets against the recipient walls : representation of the velocity vector norm as a function of time. The arrows point the moment of each shock. **(c)** Representation of the ratio R/R_0 as a function of time for ΔT = 26°C. **(d)** Evolution of the velocity vector norm with the radius. Identification of two behaviors: Small radius with low velocity









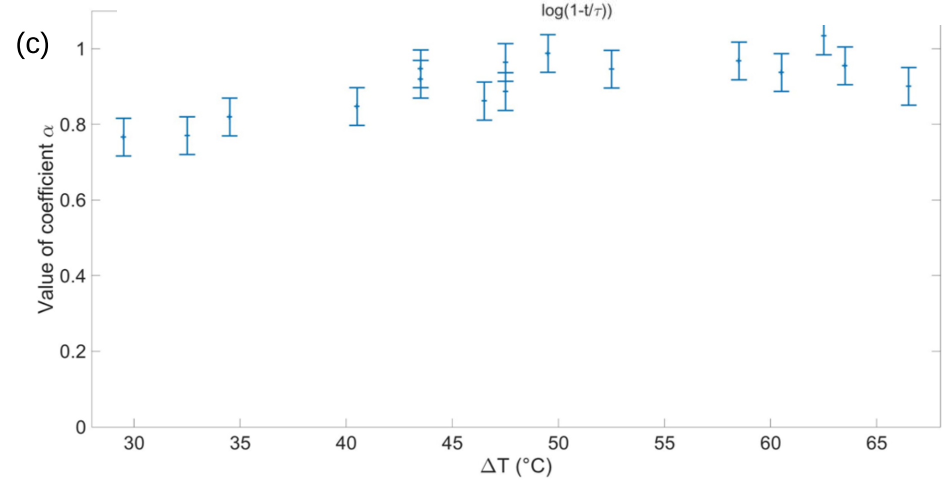


FIG. 3. Caracterisation of the static phase of an isopropanol droplet on a hot oil bath at T > $T_{threshold}$. **(a)** Evolution of the ratio of the drop's radius R over this radius at the deposition on the bath R_0 for different bath temperatures. **(b.1)** Utilization of PowerFit in Matlab to fit experimental data of the droplet radius with time thanks to the following equation : $\frac{R}{R0} = a * t^b + c$ in order to determine τ_{model}, the droplet lifetime defined by the theory model : $R/R0 = (1 - t/\tau_{model})^{\alpha}$, defined as the time when the normalized radius become zero. **(b.2)** Utilization of PolyFit in Matlab to fit experimental data of the droplet radius with $(1 - time/\tau_{model})$ thanks to the following equation : $\log(R/R0) = \alpha * \log(1 - t/\tau_{model})$ in order to determine α. **(c)** Evolution of the coefficient α as a function of ΔT.