We report in Figure ESI_6(1) the simultaneous evolution of the measured maximum temperature difference on the surface of the lens and the HTWs cells numbers for the case of FC-72 and 7 mm salt water depth liquid pool. The HTWs cells once set-in they move also for this case radially from the centre towards the edge of the lens. Two distinct regions on the lens surfaces are observed: an inner region and an outer ring. The number of cells are reported in Figure ESI_6(1) for both the inner and outer regions. From this figure it stands out that the number of HTWs cells and maximum surface temperature difference are correlated. Because the maximum temperature difference on the lens surface is the driving force for the cellular pattern, when this decreases with time and the lens size reduces, the number of HTWs cells also decreases. This follows closely what happens on HTWs in sessile drops resting on solid walls.

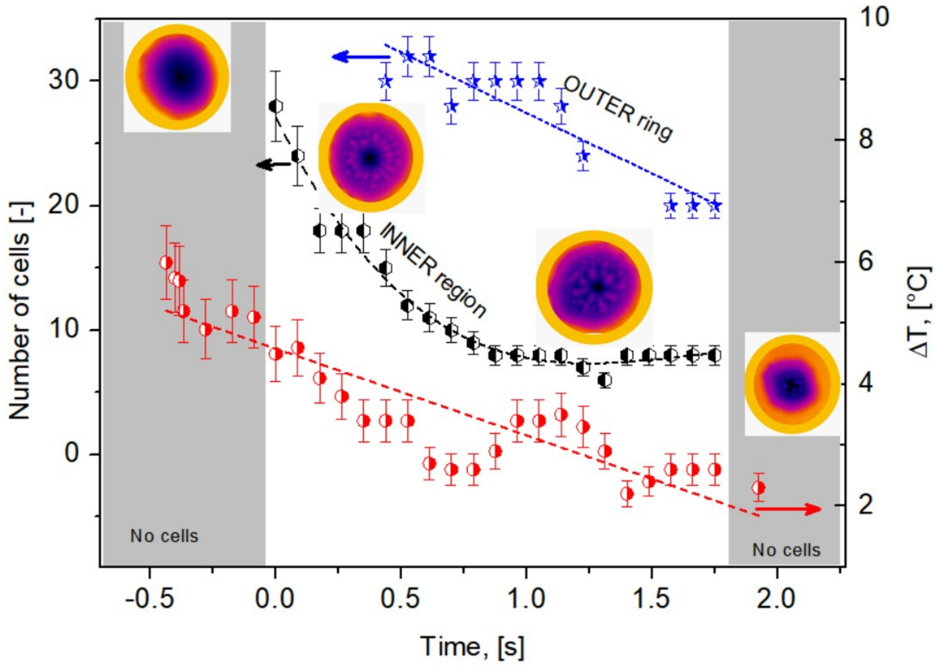

Figure ESI_6(1). Evolution of HTWs cells number and maximum surface temperature difference in time for FC-72 lens on a 7 mm salt water liquid pool. The time origin is set at the start of cellular patterns appearance.

Figure ESI_6(2) presents a tentative lens stability and HTWs maps of the various behaviors observed for different ethanol pool depths and different stages in the lifetime of the FC-72 lens where we have normalised the data with the initial depth of the liquid substrate on the y-coordinate and the lens life time on the x-coordinate. The aim of this map is to show at a glance that a lens seems to start and end its life with no HTWs on its top surface and what happens to its contact line in between the starting and ending times of the lens depends strongly on the depth of the liquid substrate. Three distinct behaviors, reported in Figure ESI_6(2), were observed depending on the pool depth and the stage of the lifetime of the lens. Each horizontal line connecting symbols represent a different experiment conducted with different liquid substrate depth. At first the lens migration follows an oscillatory behavior of the whole lenses. This is only observed for shallow depths of the pool. A second scenario corresponding to multicellular patterns on the surface (HTWs) which is observed for most of the pool depths. A third scenario where both multicellular patterns and oscillatory behavior are present simultaneously and this is recorded for intermediate depth. In Figure ESI_6(2) there are five regions which describe different lens behavior during evaporation. There are two regions named No Cells (NC) where there are no HTWs on the lens surface. Then there is a large central region named Multi-Cells (MC) in which the HTWs are present and the contact line results fragmented. At low depth of the liquid pool the lens starts oscillating back-and-forward and we noticed also HTWs on the lens surface; we name this regime Oscillatory Cells (OC). The last lower region is for unsteady-oscillatory contact line with only part of the lens surface experiencing HTWs and we call this also Multi-Cells. The present experimental study is believed to be one of the few reported in the literature in which both the lens and the liquid substrate have both very different and also comparable thickness.

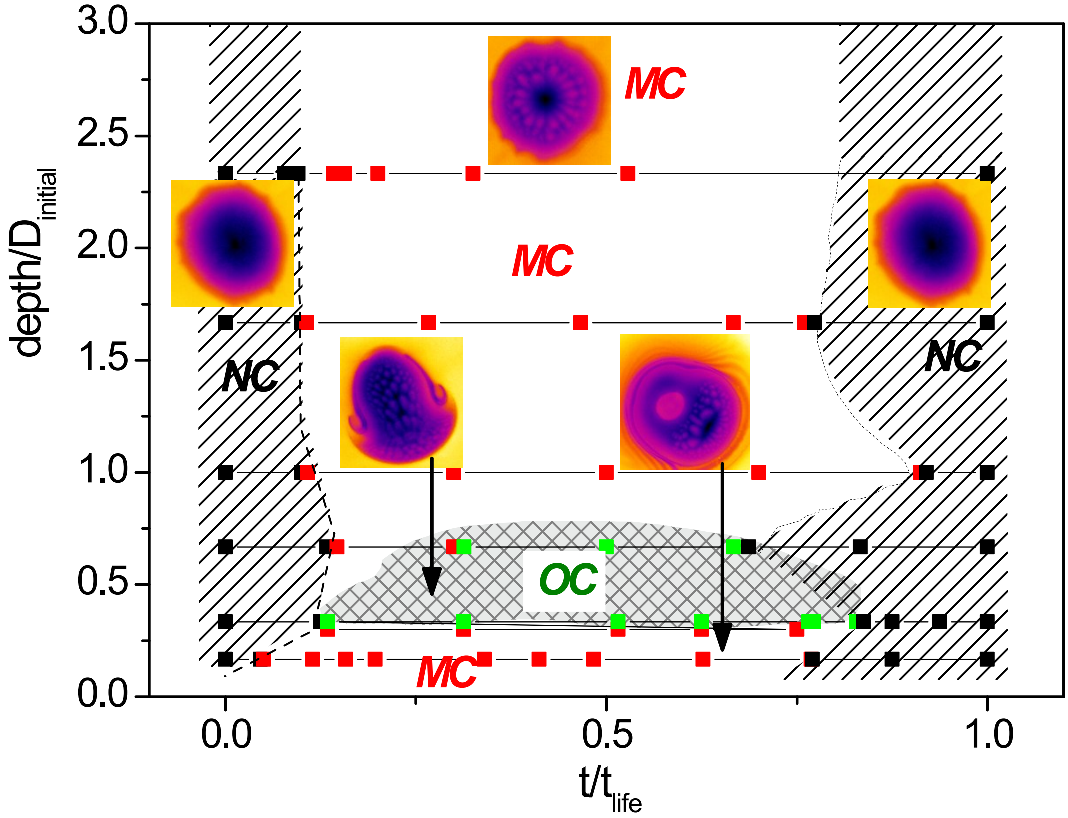

Figure ESI_6(2). Stability and HTWs regimes dependence of FC-72 lenses on the depth of the ethanol pool (normalised by drop size) and time (normalised by lifetime). NC stands for: No Cells, OC for: Oscillatory Cells, and MC for: Multi-Cells. The colour dots indicate that the experimental point belongs to different regimes: Oscillatory Cells are green; the Multi-Cells are red; No Cells regime are plotted in black. There are two MC regions: the upper region is for steady contact line; the lower region is for unsteady-oscillatory contact line with only part of the lens surface experiencing HTWs. The approximate transition boundary from one regime to the other is represented with dashed lines. The pictures depict the different typical regimes.