**Universal spatio-topological control of crystallization in sessile droplets using non-intrusive vapor mediation**

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**Supplementary Information**



**Figure S1:** Final precipitates of NaCl droplet (residue left after evaporation) for multiple trial runs of experiments. T1, T2, T3, T4 are trial 1, trial 2, trial 3, and trial 4. Experiments have been conducted for more than 10 trials, although we show 4 representative trials to make the figure concise. The first and second row corresponds to 0.15 M solvent droplet without and with ethanol, respectively. The third and fourth row corresponds to 1 M solvent droplet without and with ethanol, respectively. The marker side ‘1’ represents the side on which pendent ethanol droplet is placed. Multiple trials show the repeatability of the phenomenon.



**Figure S2**: The vectors of average velocity in z-x plane (a) averaged for 100 s at the centre of the water droplet without any droplet adjacent to it. Radially outward flow is observed from the centre of the droplet, H/H0~0.5, (b) Vectors of average velocity near the edge of the water droplet in the presence of pendent ethanol droplet at side ‘1’. The vectors averaged for 50 s are plotted during the initial stages of evaporation (t/tf~ 0.1to 0.2). The contact line remains pinned during this time. Circulatory flow is observed near the edge of the droplet, (c) Vectors of average velocity near the edge of the water droplet in the presence of pendent ethanol droplet at side ‘1’. The vectors averaged for 10 s are plotted during the final stages of evaporation (t/tf ~ 0.5 to 0.7) when the contact line recedes. However, for the period of measurement, the contact line does not recede much. (d)Vectors of average velocity near the edge of the solvent droplet (0.1 M) in the presence of pendent ethanol droplet at side ‘1’. The vectors averaged for 50 s are plotted during the initial stages of evaporation (t/tf ~ 0.1to 0.2). The contact line remains pinned during this time. Circulatory flow is observed near the edge of the droplet.



**Figure S3:** Meshing of the Fluid domain in ANSYS Meshing platform. A Rectangular domain is taken as a fluid domain. The domain size is chosen considerably large compared to the ethanol droplet size. We have considered the domain height 20 times the size of the ethanol droplet (one order higher).Since, if the domain edge is one order higher than the droplet dimension then we can consider it as a far-field. i.e.for the edge of the domain which is considered as far-field. The diffusion time scale for the length scale of ~20 times of the size of the ethanol droplet is *tdiff~(Ld)2/Dethanol-air ~*10*s*. This means the far field will experience the effect of ethanol within 10 *s*. However, the concentration of ethanol at the far-field will be negligible (). The solution will reach a steady state at nearly 10 *s*. The solvent droplet will not change its shape much for this period. When the solvent droplet starts changing its shape there will be intermittent steady states. Finally, the solvent droplet will form a shape that will make the concentration gradient such that the flow becomes directional away from the side of ethanol. This continuous depletion of fluid from one side leads to the depinning of the sessile droplet.