Cavitation in Drying of a Droplet Enclosed by a Gel Shell

(Talk #6)

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We study the drying of a droplet surrounded by a gel shell using the equilibrium thermodynamics. First-order phase transition is found during the cavitation of the system. During such drying, number of solvents decreases and the gel shrinks homogeneously at first. With more solvents evaporated, cavity inside the gel appears and volume of such system increases and then remains a nearly constant value. We studied the cavity dependence on the shear modulus G and surface tension $ γ $. This can be used to find the mechanism of drying of a colloids\polymer droplet.

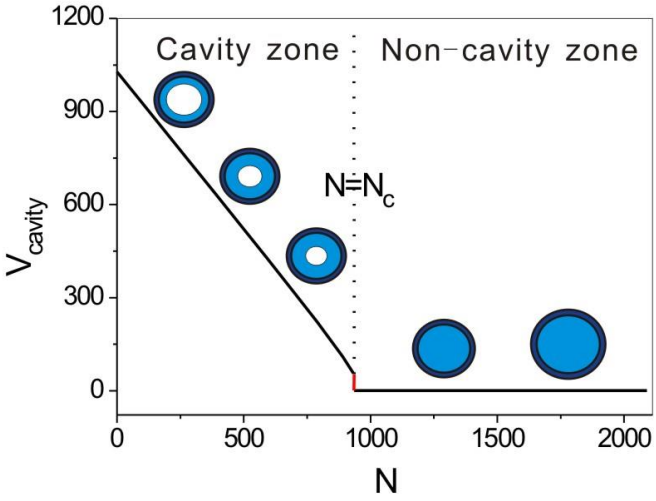

Figure 1: cavity vs. N relation. V_cavity is volume of cavity inside the droplet and N is number of solvents unevaporated.