Supplementary Information (SI) for CrystEngComm.

Supplementary Material for:

Rapid Polymorphic Screening using Sessile Microdroplets: Competitive Nucleation of Mannitol Polymorphs

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S1. Evaporation Model

Table S1 Numerical values used as input in evaporation model[1] for aqueous D-mannitol droplets and Mersmann correlation[2], referenced at 25ºC and 1 atm.

Quantity	Symbol	Value	Unit
solubility of water in PDMS oil[1]	c_s	8.76	mol/m^3
diffusivity of water in PDMS oil[1]	D	6.74×10^{-9}	m^{2}s^{-1}
supersaturation at matching time*	S_{match}	4.00	-
coefficient of density change for mannitol[3]	b_1	0.0719	-
coefficient of water activity lowering for mannitol[4]	b_2	0.194	-
solubility of β-mannitol in water[5]	c_{eq}	1.185	mol/kg
solubility of β-mannitol in water[5]	c_{eq}	1217.4	mol/m^3
solubility of α -mannitol in water[5]	c_{eq}	1453.0	mol/m^3
solubility of δ -mannitol in water[5]	c_{eq}	1667.5	mol/m^3
equilibrium solid-state β-mannitol[5]	C_{sol}	8323.7	mol/m^3
equilibrium solid-state α -mannitol[5]	C_{sol}	8210.5	mol/m^3
equilibrium solid-state δ -mannitol[5]	C_{sol}	8365.6	mol/m^3
molar mass of mannitol	M_{Man}	0.182	kg/mol
diffusivity of mannitol in water[6]	D_i	6.05×10^{-10}	m^2/s
density of pure water[7]	ρ_w	997	kg/m^3

*measured by monitoring/interpolating the droplet volume (lateral view) as it optically disappears, supersaturation $S = c/c_{eq}$

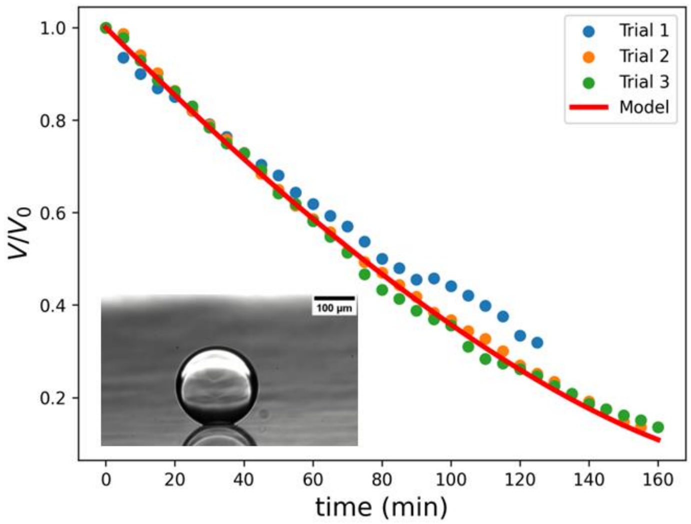

Figure S1. Evolution of relative droplet volume (V/V_0) as a function of time (3 replicates) taken from lateral images.

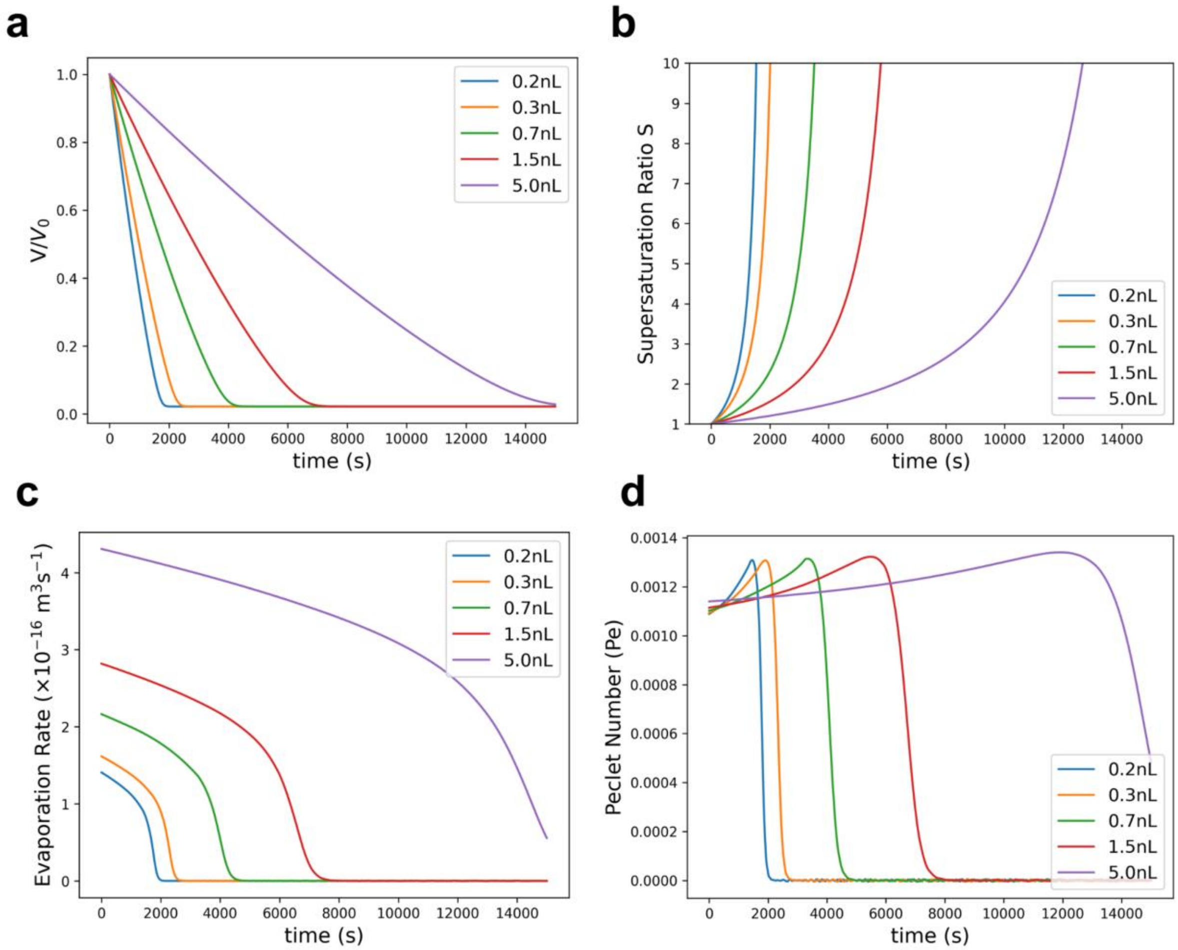

Figure S2. Model predictions for bottom-view arrays of microdroplets in terms of (a) relative volume V/V_0 (b) supersaturation ratio (c) evaporation rate (d) Peclet number[1, 8]. Pe < 1 suggests a uniform distribution of concentration within the droplet. The droplets were subjected under the following conditions: RH = 0.10, T = 25°C, P = 1 atm.

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