Electronical Supporting Information

On the effect of particle surface chemistry in film stratification and morphology regulation

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Table S1. Number of particles of silica and binders and their relative ratios against various silica content in the formulations.

Silica wt. %	No. of silica particles	No. of binder particles	Ratio of number of silica particles to the number of binder particle	
10	1,29E+15	5,93E+13	22	Number of silica particles per droplet of binder = (surface area of one binder particle/area of one silica particle) =198
20	2,57E+15	5,27E+13	49	
30	3,86E+15	4,61E+13	84	
40	5,15E+15	3,95E+13	130	
50	6,43E+15	3,29E+13	195	
60	7,72E+15	2,63E+13	293	
70	9,01E+15	1,98E+13	456	
80	1,03E+16	1,32E+13	781	
90	1,16E+16	6,59E+12	1758	
100	1,29E+16	0,00E+00	--	

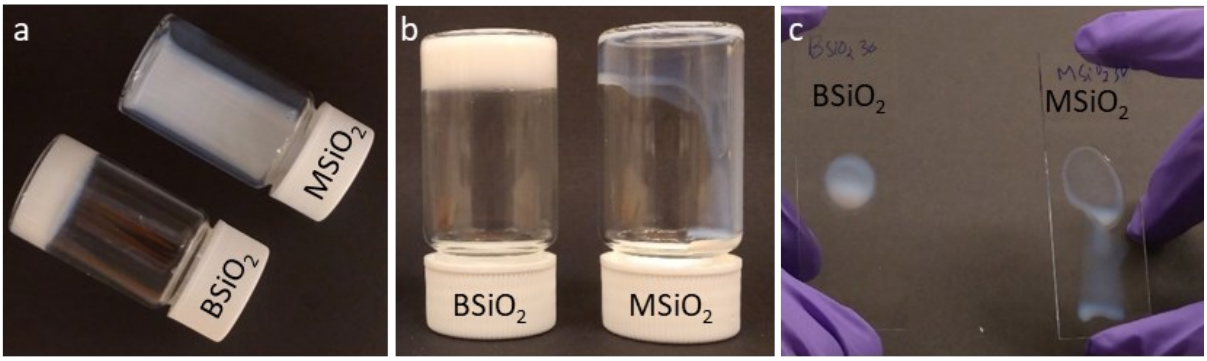

Figure 1S. Gelation tendencies of a 30 wt.% total dry solid content formulation was made with 20 wt.% silica (M_{SiO2} or B_{SiO2}) and 80 wt.% binder (B1). a) and b) The In absence of any external electrolytes the bare silica sample gelled after 7 days whereas the modified silica formulation retained its flowability. c) A drop of 150 µl from each of the formulation was allowed to stand on a glass slide for 10 minutes and then was tilted to an angle of 45°. The bare silica sample was resistant to flowability compared to modified silica sample at 20°C, indicating its early gelation tendencies.

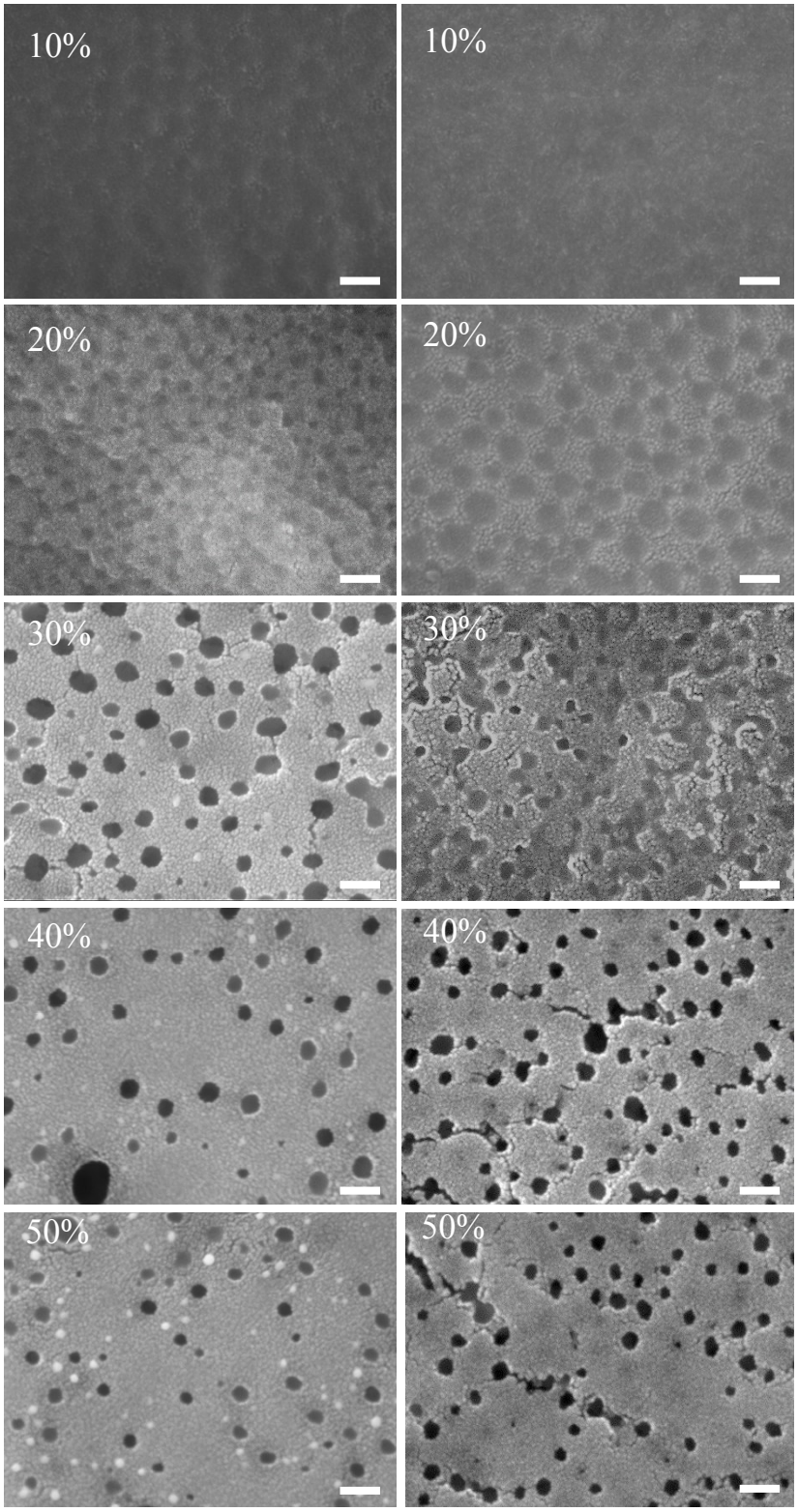

Figure 2S. Surface morphology of B2-M_{SiO2} and B3-M_{SiO2} films with total solid content of 5 wt%, dried at room temperature. The % value indicates the silica mass fractions. The white bar indicates a scale of 100nm