Influence of Cellulose Nanocrystal Surface Chemistry and Dispersion Quality on Latex Nanocomposite Stability, Film Formation and Adhesive Properties

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Table S1. Summary of number of repeats (n) performed per sample per test for tack, peel strength and shear strength testing for BA/MMA cast latex films.

	tack	peel strength	shear strength
50 wt.% control	4	4	3
never-dried cCNCs	6	6	5
dried cCNCs	6	6	5
never-dried sCNCs	5	6	4
dried sCNCs	6	6	6

Table S2. An example of the reproducibility of the BA/MMA latex synthesis with and without CNCs; column 1 and 3 are the "control" measurements performed on a "combined" latex that is a mixture of three individual synthetic runs, whereas, column 2 and 4 are the average of three individual runs. Standard deviation is for n = 3 repeats of the test for the "combined" latexes and n = 3 repeats of the latex synthesis for the average of three latexes.

	40 wt.% control "combined" latex	40 wt.% control average of three latexes	never-dried cCNC "combined" latex	never-dried cCNC average of three latexes
Conversion (%)	98 ± 0.1	98 ± 1	93 ± 0.1	94 ± 6
solids content (%)	39 ± 0.1	39 ± 1	37 ± 0.1	38 ± 2
latex particle size (nm)	192 ± 2	188 ± 5	185 ± 1	184 ± 11
latex PDI	0.02 ± 0.01	0.03 ± 0.007	0.2 ± 0.04	0.1 ± 0.06
zeta potential (mV)	-24 ± 1	-21 ± 1	-35 ± 1	-33 ± 2
pH	3.4	3.7 ± 0.1	3.8	4.5 ± 0.9

Table S3. The p-value from an independent Student's t-test on the latex PSA results. The t-test estimates if the difference in the reported tack, peel and shear values are statistically significant. The null hypothesis is that there is no difference in variance between the reported measurement of tack, peel and shear between the two populations listed in the left column. If p>0.05 fail to reject the null hypothesis and if p<0.05 reject the null hypothesis.

Compared Latexes	p-values		
	tack	peel strength	shear strength
never-dried CNC, dried cCNC	0.008	0.467	0.001
never-dried sCNC, dried sCNC	< 0.001	< 0.001	0.269
never-dried cCNC, sCNC never dried	< 0.001	0.098	0.390
never-dried cCNC, dried sCNC	0.508	0.015	0.718
dried cCNC, never-dried sCNC	< 0.001	0.114	0.003
dried cCNC, dried sCNC	0.016	0.001	0.001
never-dried cCNCs, 50 wt.% control	< 0.001	0.001	0.106
dried cCNC, 50 wt.% control	< 0.001	< 0.001	0.005
never-dried sCNC, 50 wt.% Control	0.634	0.001	0.063
dried sCNC, 50 wt.% control	0.001	< 0.001	0.192