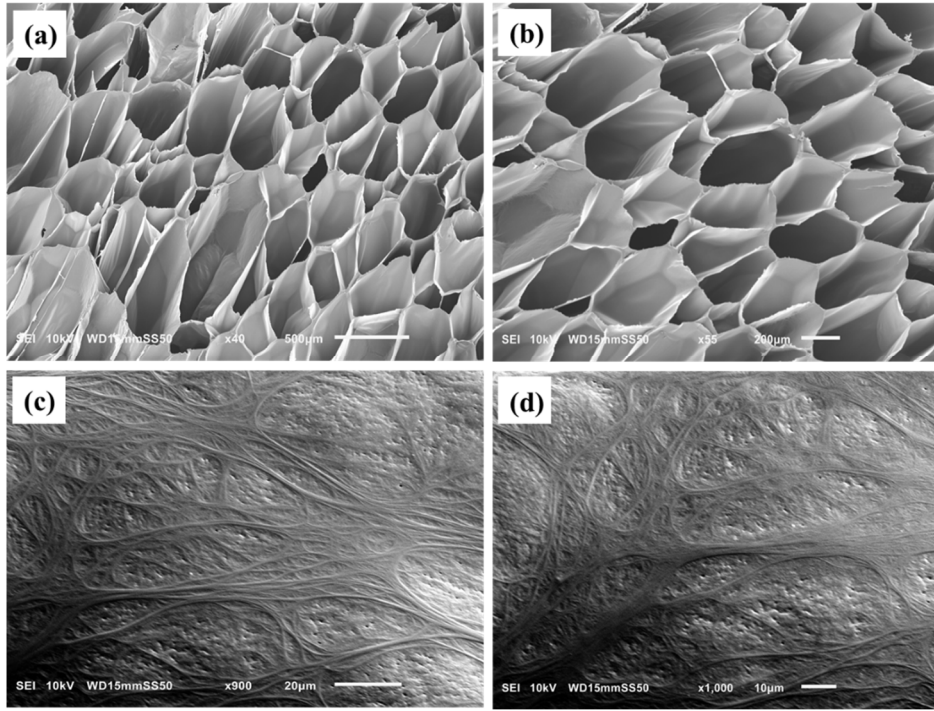
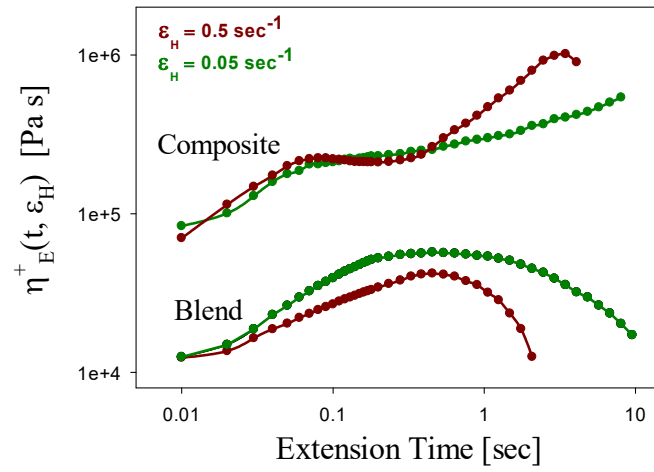


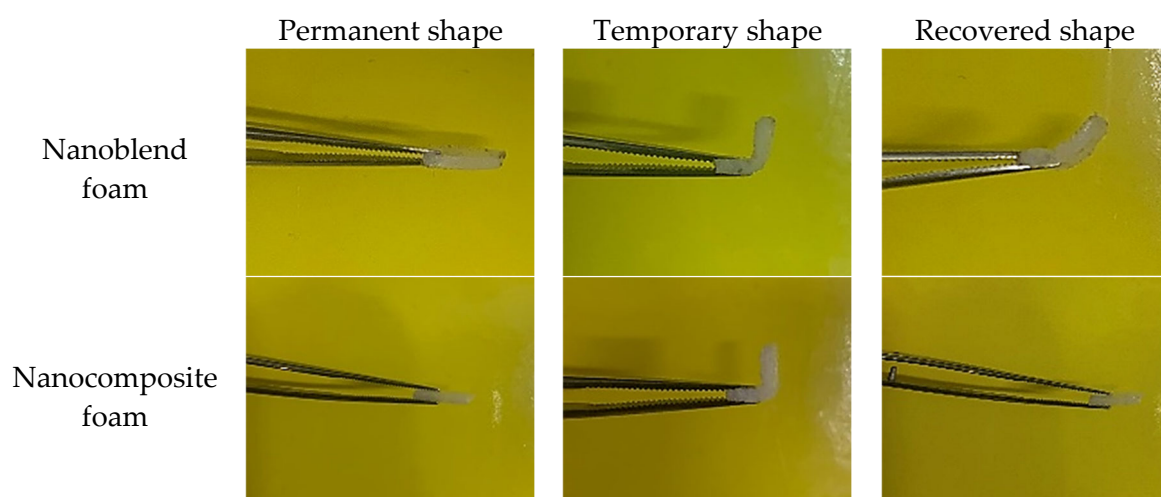
**Figure 1S.** SEM images of the foams of PLA/PA nanoblends (a and b) with the PA nanodroplets reinforced cell walls of PLA (c and d).



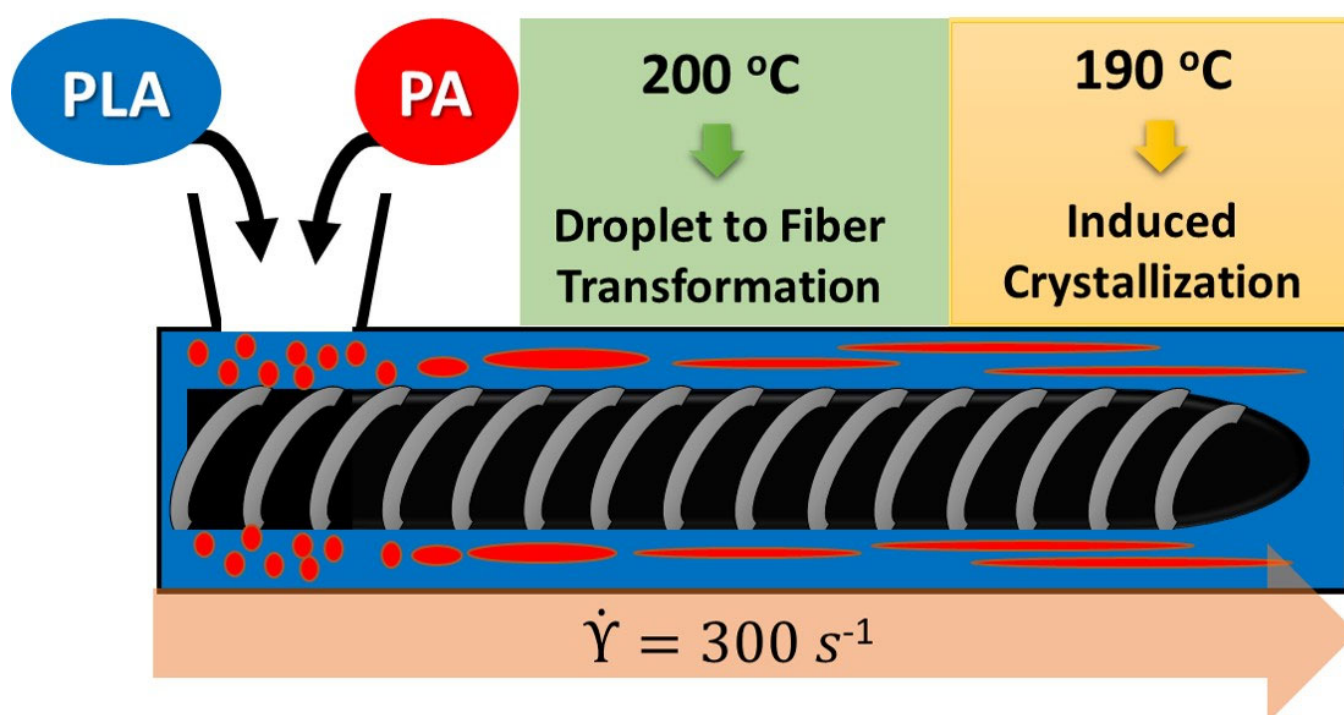
**Figure 2S.** SEM images of the foams of PLA/PA in-situ generated composites (a and b) with the PA nanofibers reinforced cell walls of PLA (c and d).



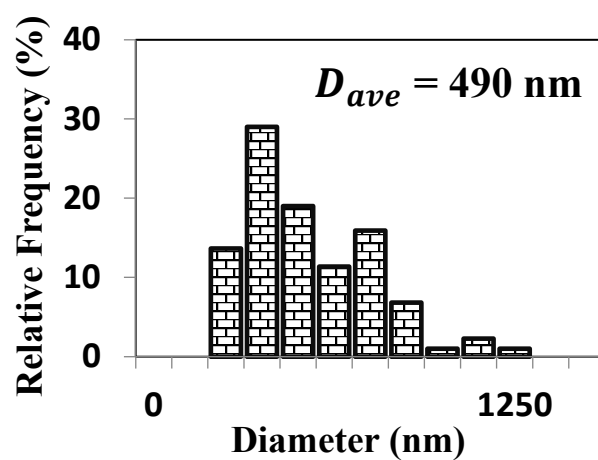
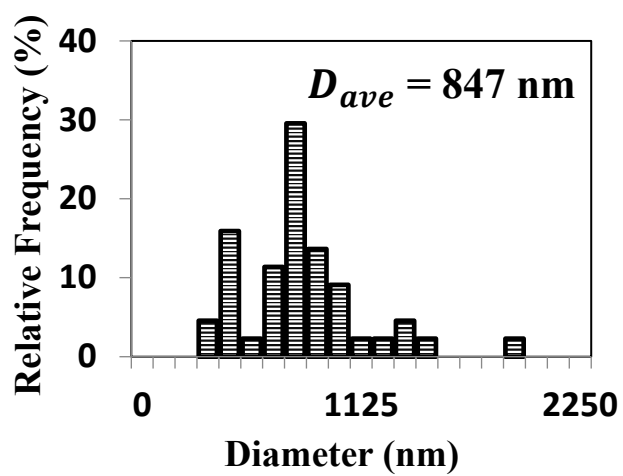
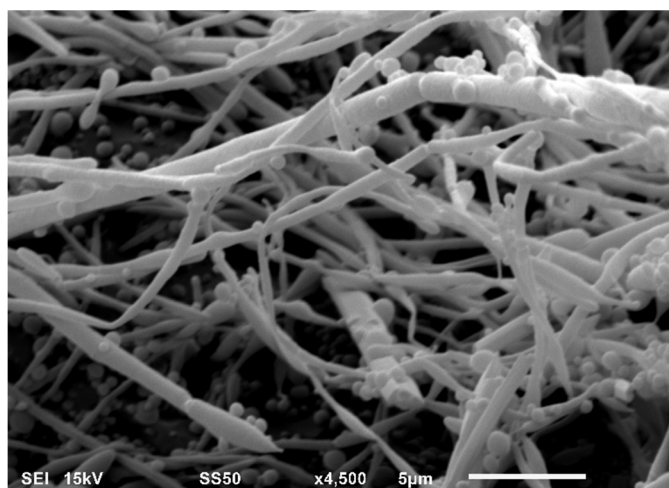
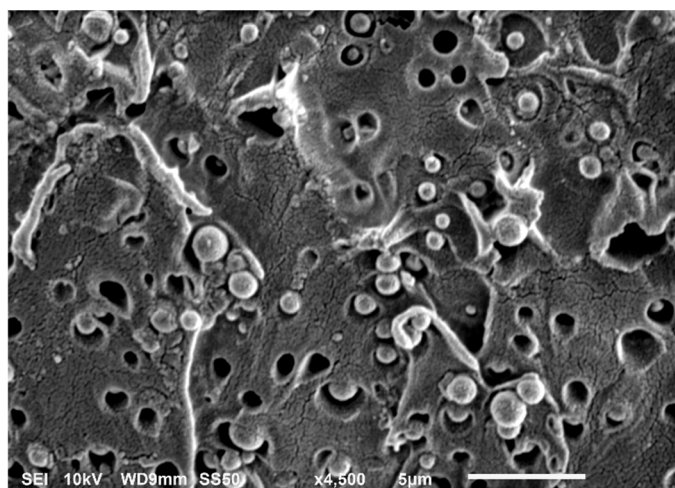
**Figure 3S.** Time-dependence of the tensile stress growth coefficient,  $\eta_E^+(t, \epsilon_H)$ , for PLA/PA nanoblend and in situ generated composite.



**Figure 4S.** Illustration of the shape memory behaviour of PLA/PA nanoblend and in-situ generated composites



**Figure 5S.** Schematic illustrating the transformation of droplets into fibers and their stabilization under high shear rate during extrusion.



**Figure 6S.** SEM images of PLA/PA nanoblend (left) and in-situ generated composites (right) at higher magnification of 4500X and histograms of PA particle size distribution.