

## Supplementary information

Table S1 Average impact velocity, energy, force at peak, energy at peak and displacement for all impacted samples

| Velocity at Start [m/s] | Measured impact energy [J] | Force at Peak [N] | Energy at Peak [J] | Displacement at Total [mm] |
|-------------------------|----------------------------|-------------------|--------------------|----------------------------|
| 0.77                    | 1.48                       | 7832.09           | 1.38               | -33.28                     |

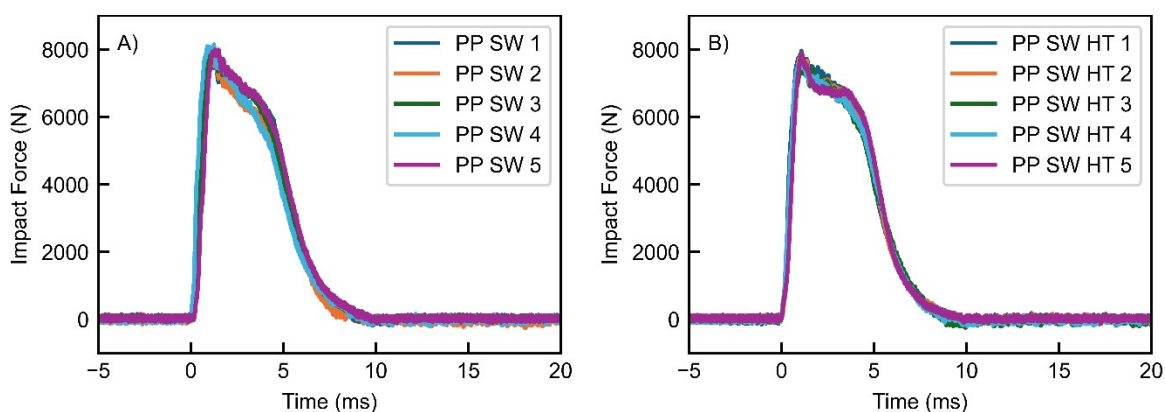


Figure S1 Recorded impact force timeseries for all impacted samples; A) Sample Set 2; B) Sample Set 4.

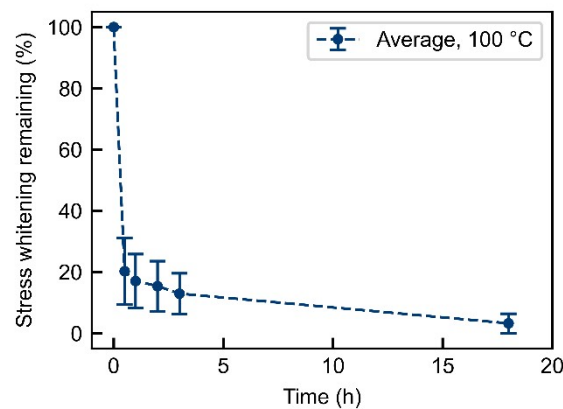
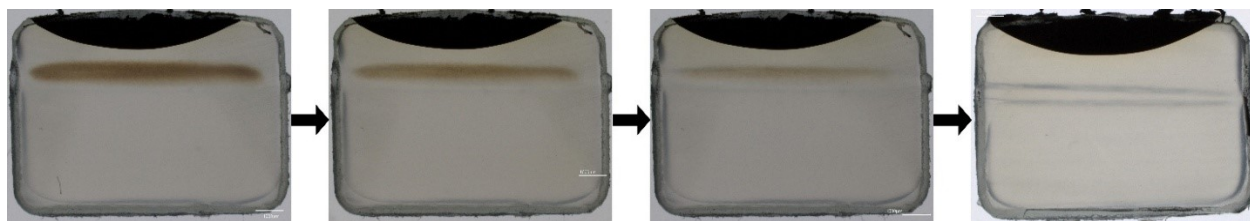


Figure S2 Average apparent reduction of stress whitening by heating of five samples (PP SW HT 1-5). Error bars indicate standard deviation.



*Figure S3 Microscope images taken during heat treatment, showing the visible reduction in stress whitening. Stress whitening appears brown due to backlighting in the microscope.*