Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Superheated droplets for protein thermal stability analyses of GFP, BSA and Taq-Polymerase

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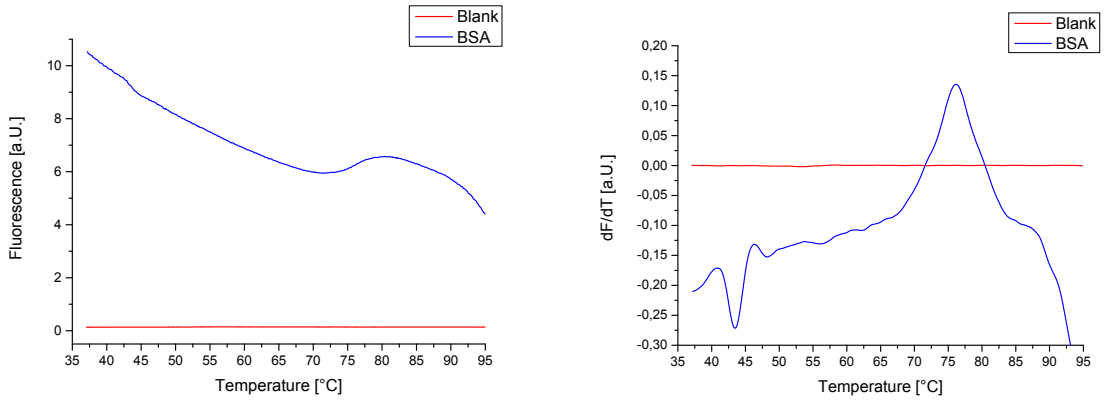
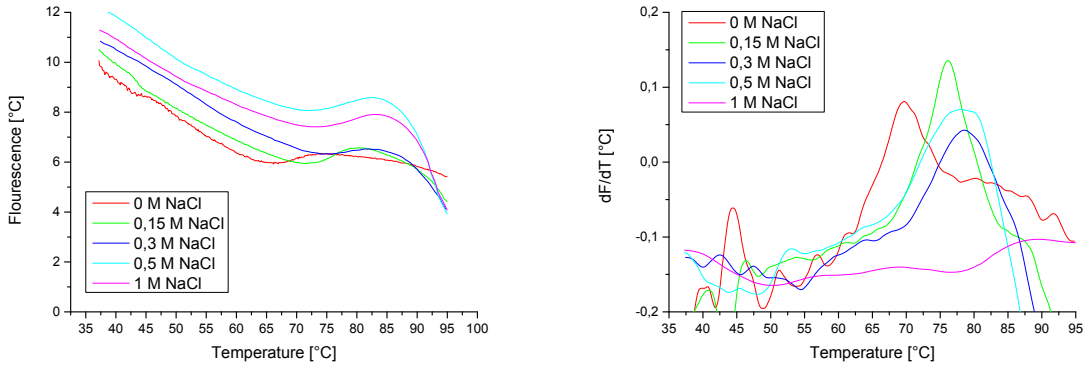
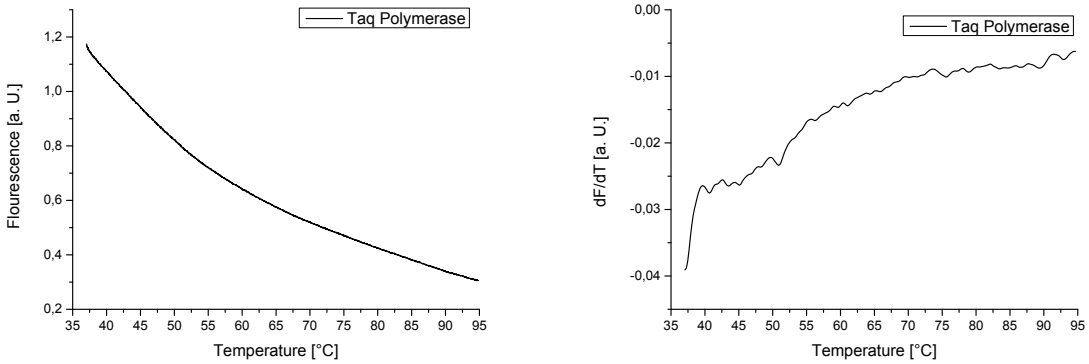


S1. Measurement of background fluorescence of hydrophobic dye bye done with light cycler (left) and first derivative of signal with respect to temperature (right). The sample containing only the dye and buffer, volumes were adjusted to 20µL using water (red). In the same run a sample containing BSA was tested (blue) as a comparison of typical signal intensities.



S2. Experiments researching stability of BSA in solution with different concentrations of NaCl conducted on the Roche Light Cycler, capillary based. The left graph shows the captured fluorescence as a function of temperature, while the right displays the first derivative of fluorescence with respect to temperature. For excitation the Light Cycler uses an LED with a peak emission wavelength of 470nm, an emission filter with a bandpass of 710nm was used for capturing fluorescence. As

observed in the experiments on chip the denaturation temperature of BSA increases with increasing salt concentration. The temperatures found on the commercial device are comparable to the ones found on chip, but are shifted due to the difference in temperature calibration as explained in the experiments conducted with GFP.



S3. Denaturation of Taq polymerase as recorded by the LightCycler. The signal is very low compared to measurements conducted with BSA. Furthermore the optical filters of the commercial device are not optimal for the dye used in the experiments. A decrease in fluorescence with increasing temperature can be observed as seen on chip. However, due to the low signal no denaturation of domains can be observed.