Solution based low temperature CsPbI₃ nanoparticles perovskite solar cells

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Figure S1. Demonstration of the tyndall effect by a lesser beam that was transfer through CsPbI₃ solutions before (right) and after (left) heating treatment.
Fig S2. Fourier Transform Infrared (FTIR) Spectroscopy of (a) Fresh DMSO and DMSO after heating to 180 °C for 72 h (b) Only PbI₂ in DMSO heating to 180 °C for 72 h compare to heated DMSO (c) Only CsI in DMSO heating to 180 °C for 72 h compare to heated DMSO.
**Fig S3.** $^{133}$Cs NMR spectrum of CsPbI$_3$ solution before and after heating.

**Fig S4.** Photos of the CsPbI$_3$ films after annealing at 55°C
Fig S5. (a) $^1$H-NMR (DMSO-$d_6$ as solvent) of fresh DMSO (blue) and DMSO after heating (yellow) (b) magnification of 1-4 ppm (c) magnification of 9-10 ppm. (d) $^1$H-NMR (D$_2$O as solvent) of films under annealing process at different temperatures 55 °C (gray), 100 °C (red) and 350 °C (blue) (e) magnification of 4.7-4.9 ppm (f) magnification of 3.4-4.2 ppm and (g) magnification of 1.8-2.0 ppm
Figure S6. (a) HAADF STEM of CsPbI₃ NPs. Inset: FFT image of the corresponding sample. (b) magnification of a specific area in the sample.

Figure S7. Graph of the efficiency without (yellow) and with additives (green) for CsPbI₃ based SCs
Fig S8. Current-voltage curves for forward and reverse scans