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## **Supporting Information**

## Stable energy density of PMN-PST ceramic from room temperature to Curie point based on synergistic effect of diversified energy

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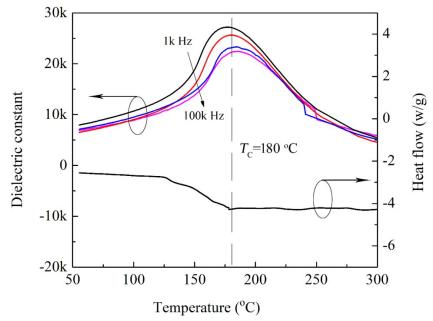


Fig. S1 The temperature dependence and the thermal characteristic of the PMN-PST ceramic.

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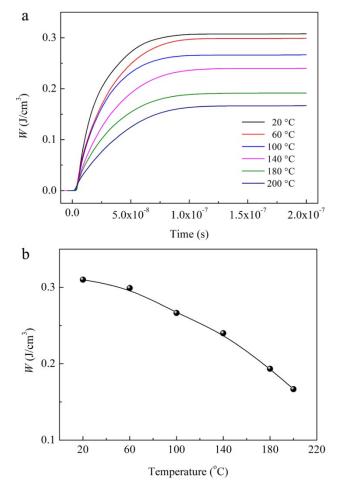


Fig. S2 The temperature dependence of the energy density for the PMN-PST<sub>F</sub> ceramic.

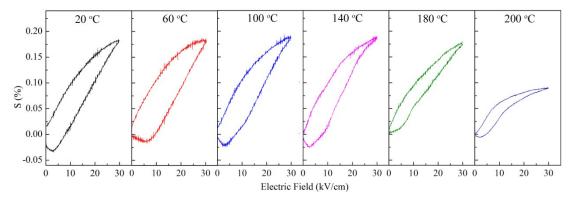
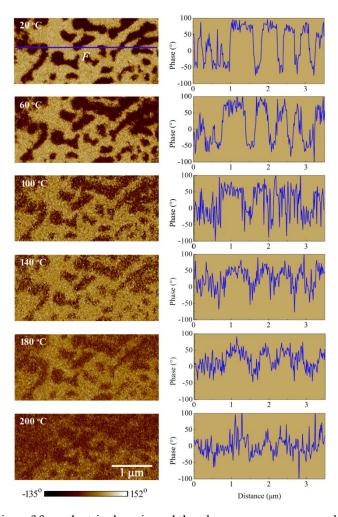
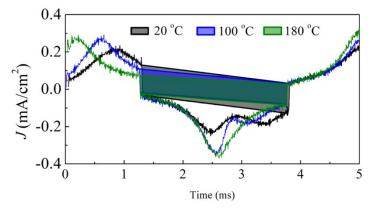


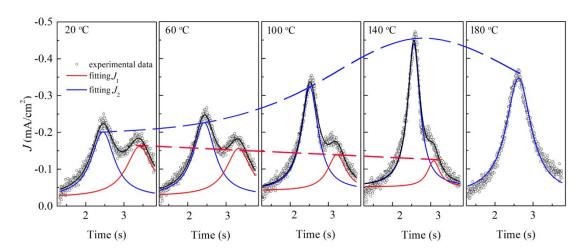
Fig. S3 The strain properties of the PMN-PST ceramic at different temperature.



 $\label{eq:Fig.S4} \textbf{Fig. S4} \ \text{The evolution of ferroelectric domain and the phase curves corresponding to the blue line in the PMN-PST_F ceramic.}$ 



**Fig. S5** A comparison of the areas based on the J-t curves at 20 °C, 100 °C and 180 °C in the PMN-PST ceramic.



**Fig. S6** The fitting  $J_1$  and  $J_2$  based on the J-t curves in the PMN-PST ceramic.