Supporting Information

Extensive screening and performance testing of nucleating agents for the sodium acetate trihydrate phase-change material

*Jinjie Li, Michael A. Parkes and Christoph G. Salzmann**

Department of Chemistry, University College London, 20 Gordon Street, London WC1H 0AJ, United Kingdom.

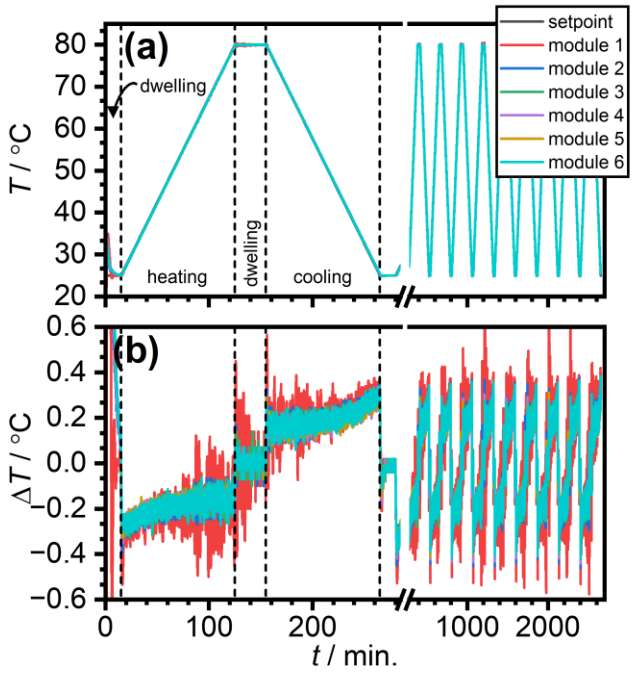

Figure S1. (a) Setpoint and actual temperatures of the six heating modules containing empty glass vials recorded over 10 cycles each consisting of a dwelling stage at 25 °C for 15 minutes, heating at 0.5 K min^{-1}, dwelling at 80 °C for 30 minutes and cooling at 0.5 K min^{-1}. The curves strongly overlap and individual curves are therefore difficult to see. (b) Differences between the setpoint and actual temperatures for each of the six heating modules illustrating that the thermal lag is generally smaller than 0.3 °C.

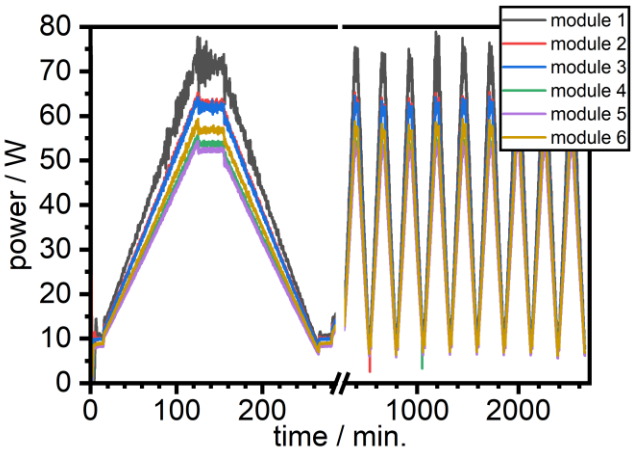

Figure S2. Electric power of the heating elements of the six modules required to follow the temperature program shown in Figure S1.

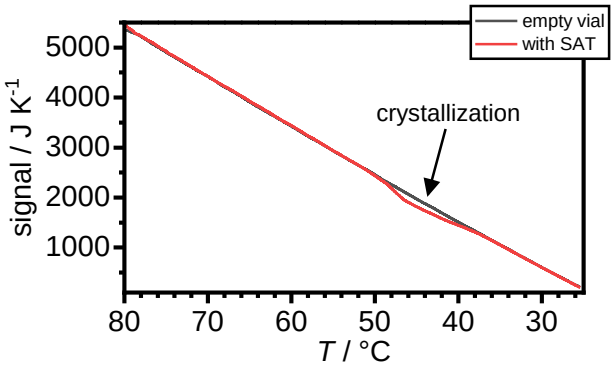

Figure S3. HeatMaster data in J K^{-1} upon cooling an empty glass vial and a vial containing 5 g sodium acetate trihydrate with nucleating agent from 80 to 25 °C at 0.5 K min^{-1}.

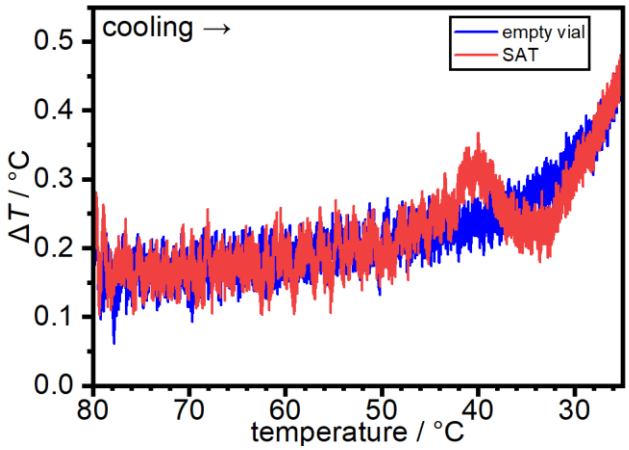

Figure S4. Temperature difference between actual and setpoint temperature upon cooling an empty glass vial and a vial containing 5 g sodium acetate trihydrate with nucleating agent. The minor temperature differences during crystallization illustrate the active power compensation.

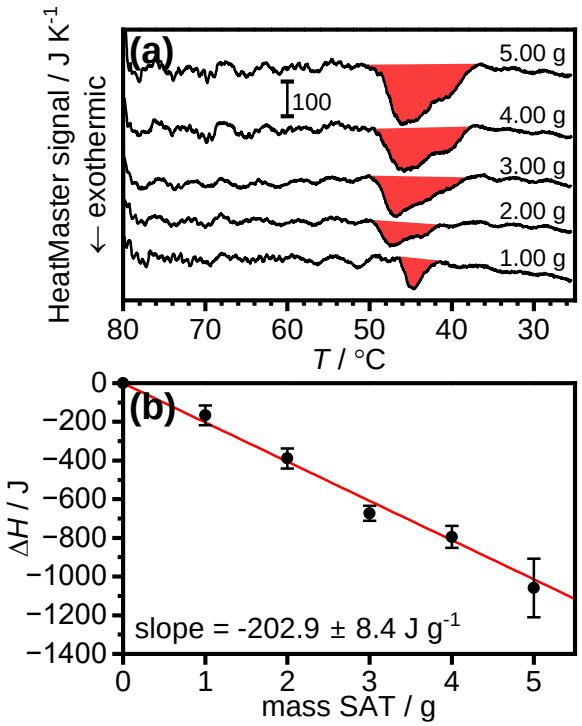

Figure S5. (a) Background-corrected HeatMaster data recorded upon cooling at 0.5 K min^{-1} of sodium acetate trihydrate with masses from 5 to 1 g and 5 w% of nucleating agent ($CaCl_2 \cdot 2H_2O$). (b) Enthalpies obtained upon crystallizing different masses of sodium acetate trihydrate illustrating good linear behavior of the HeatMaster instrument.

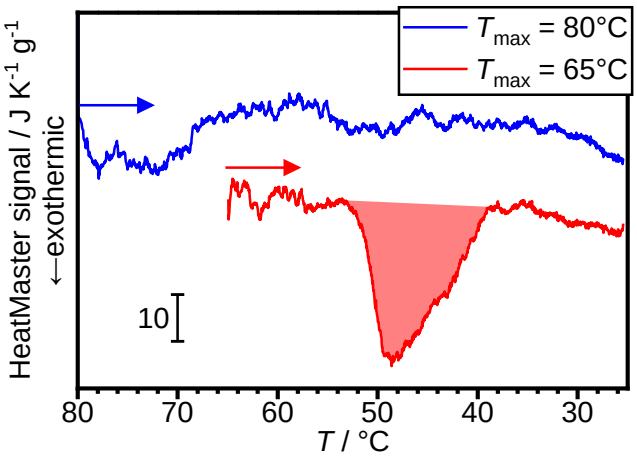

Figure S6. HeatMaster scans recorded upon cooling 5 g sodium acetate trihydrate and 0.25 g (4.76 w%) of $Na_2HPO_4 \cdot 12H_2O$ as nucleating agent using a cooling rate of 0.5 °C min^{-1}, and starting temperatures of 80 and 65 °C, respectively.

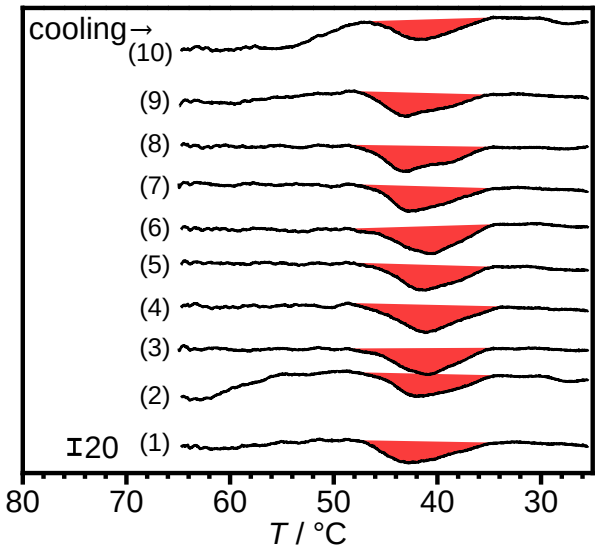

Figure S7. HeatMaster scans of 5 g sodium acetate trihydrate with 0.25 g (4.76 w%) $MgCl_2 \cdot 6H_2O$ and 10 cycles recorded upon cooling at 0.5 K min^{-1} from 65 to 25 °C. Exotherms are indicated by red-shaded areas, respectively.

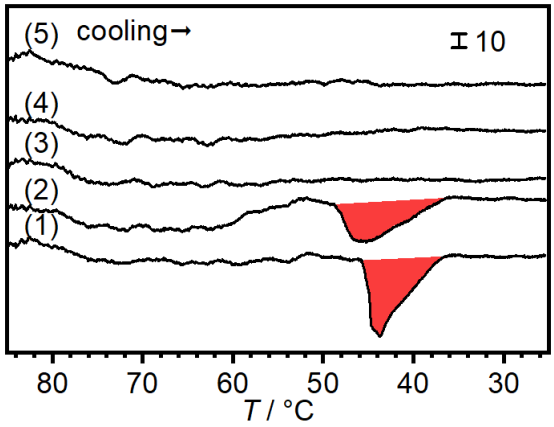

Figure S8. HeatMaster scans of 5 g sodium acetate trihydrate with 0.25 g (4.76 w%) $CaCl_2 \cdot 2H_2O$ and 5 cycles recorded upon cooling at 0.5 K min^{-1} from 85 to 25 °C. Exotherms are indicated by red-shaded areas, respectively.

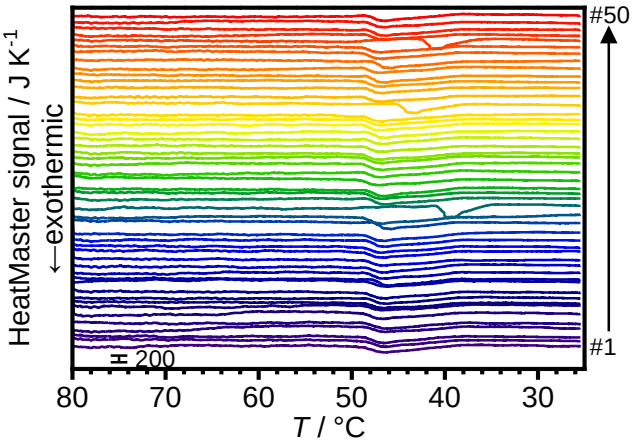

Figure S9. HeatMaster data recorded upon cooling 5 g sodium acetate trihydrate with 0.25 g (4.76 w%) $CaCl_2 \cdot 2H_2O$ at 0.5 °C min^{-1} over 50 cycles.