thermo

MDPI

Supplementary Materials

Alterations of a $CaCl_2$ alginate composites for thermochemical heat storage, during the hydration in a 1 L packed bed laboratory reactor

Stephan Heitmann [1,*], Tamás Simon [2], Andrea Osburg [1] and Michael Fröba [2]

[1] F. A. Finger-Institute for Building Material Engineering, Chair of Construction Chemistry and Polymer Materials, Bauhaus-Universität Weimar, Coudraystraße 11A, 99423 Weimar, Germany
[2] Department of Chemistry, Institute of Inorganic and Applied Chemistry, University of Hamburg, Martin-Luther-King-Platz 6, 20146 Hamburg, Germany
* Correspondence: stephan.lukas.heitmann@uni-weimar.de

Contents

Calcium chloride alginate composite – raw material – calorimetric and thermo gravimetric measurement.

Reaction calorimetry with 20 % relative humidity in nitrogen

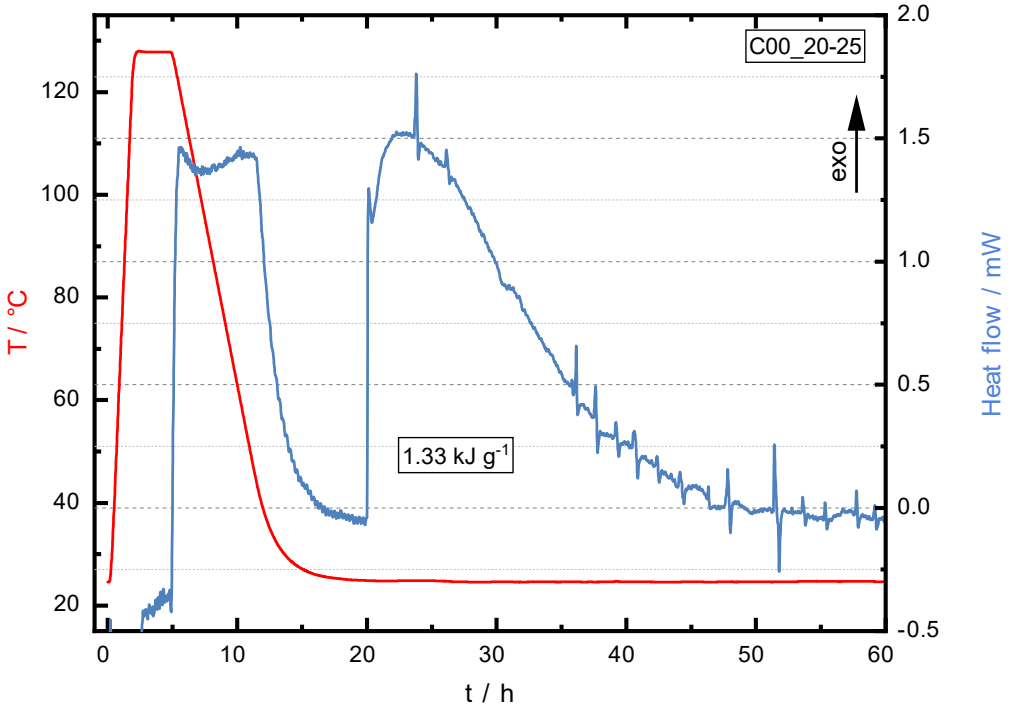

Figure S1. Heat of reaction measured by isothermal calorimetry at 20 % RH.

Thermogravimetric examination of the calorimetric sample

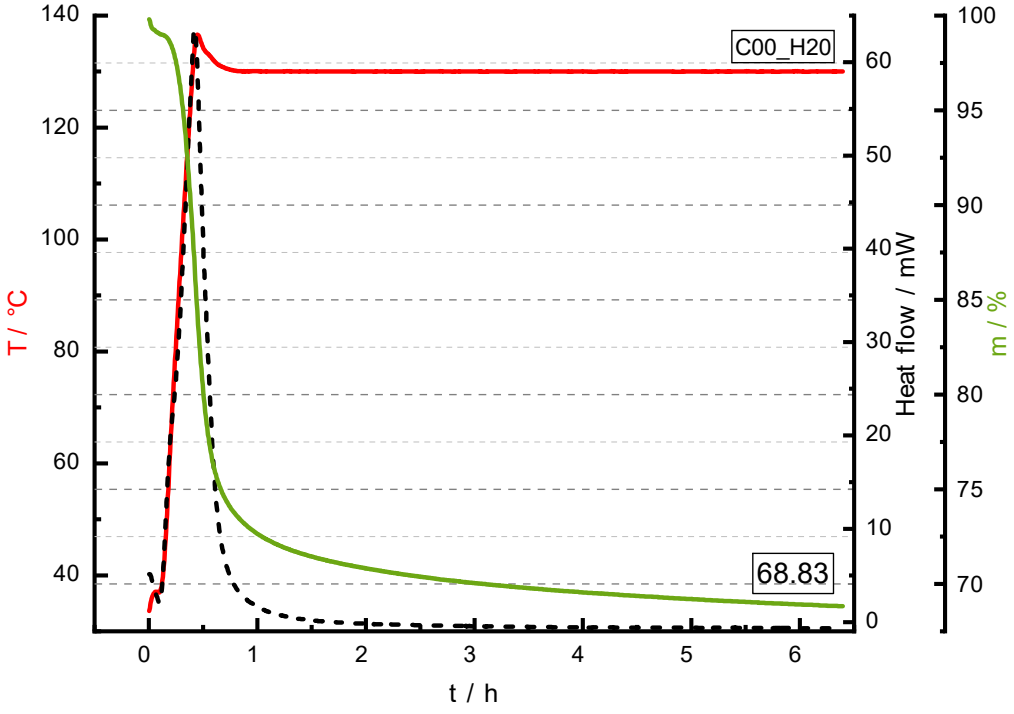

Figure S2. Mass loss during dehydration at 130 °C.

Reaction calorimetry with 30 % relative humidity in nitrogen

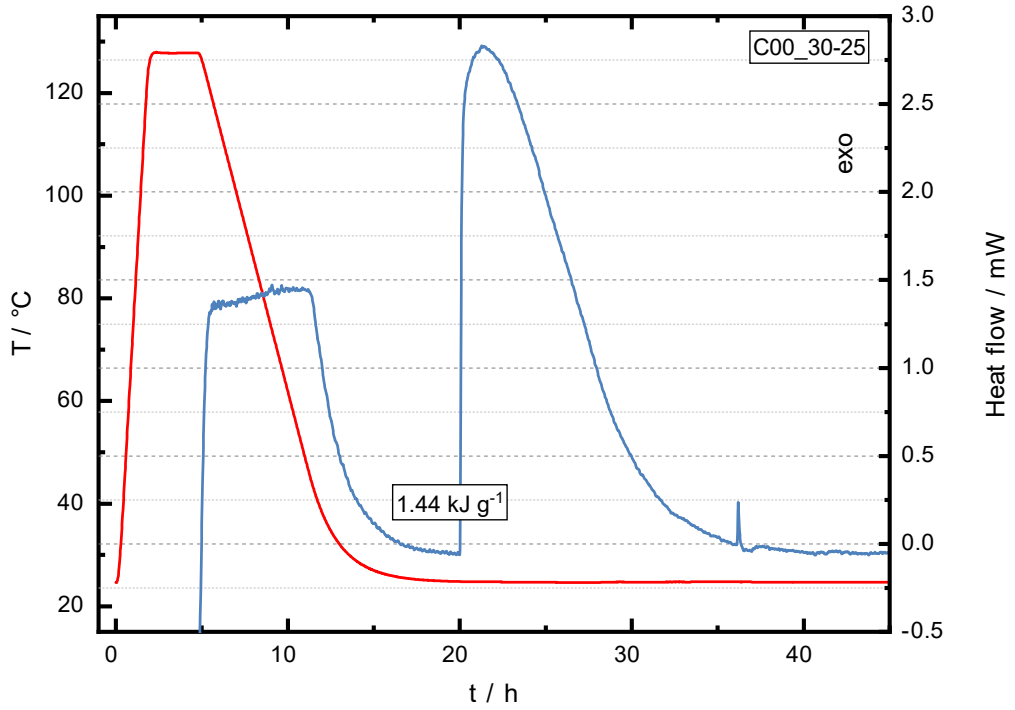

Figure S3. Heat of reaction measured by isothermal calorimetry at 30 % RH.

Thermogravimetric examination of the calorimetric sample

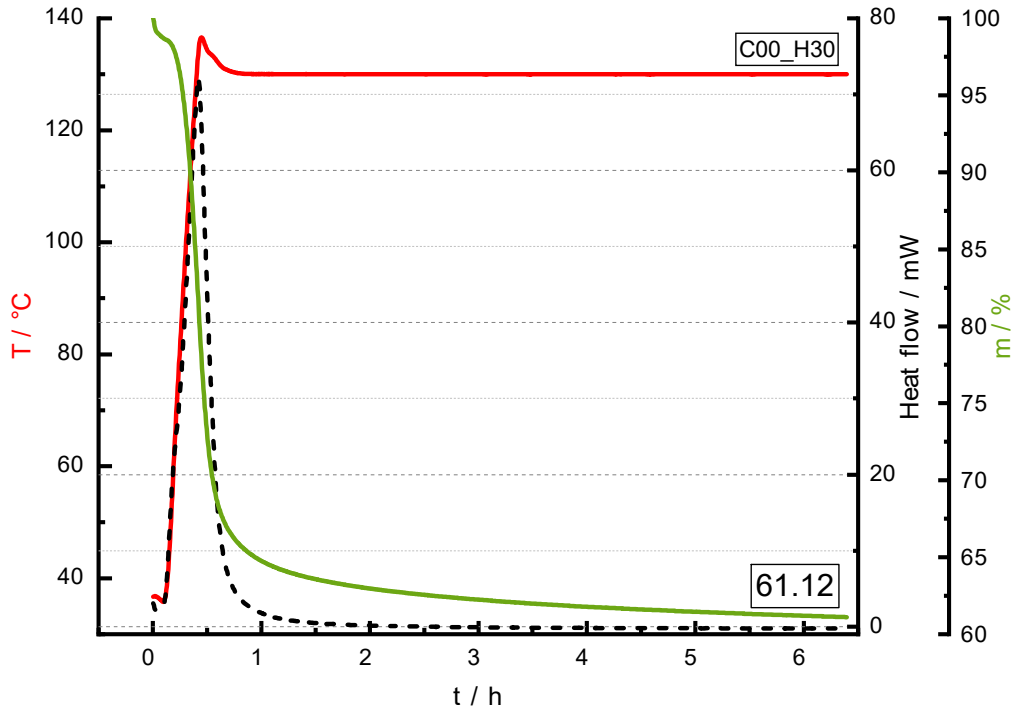

Figure S4. Mass loss during dehydration at 130 °C.

Calcium chloride alginate composite – five cycles – calorimetric and thermo gravimetric measurement.

Reaction calorimetry with 20 % relative humidity in nitrogen

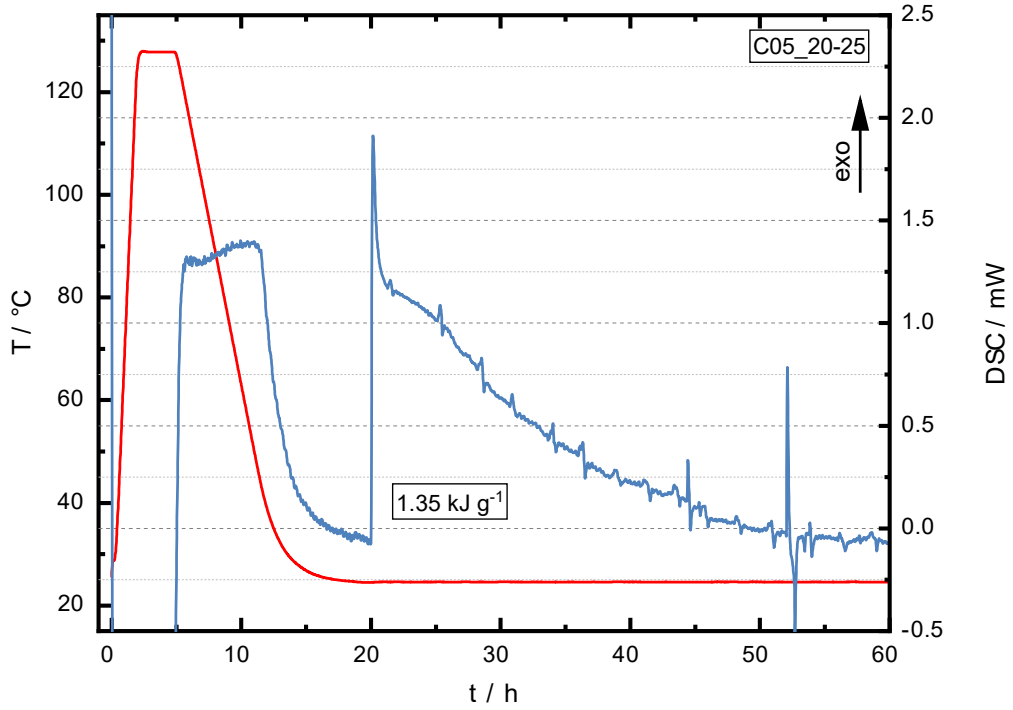

Figure S5. Heat of reaction measured by isothermal calorimetry at 20 % RH.

Thermogravimetric examination of the calorimetric sample

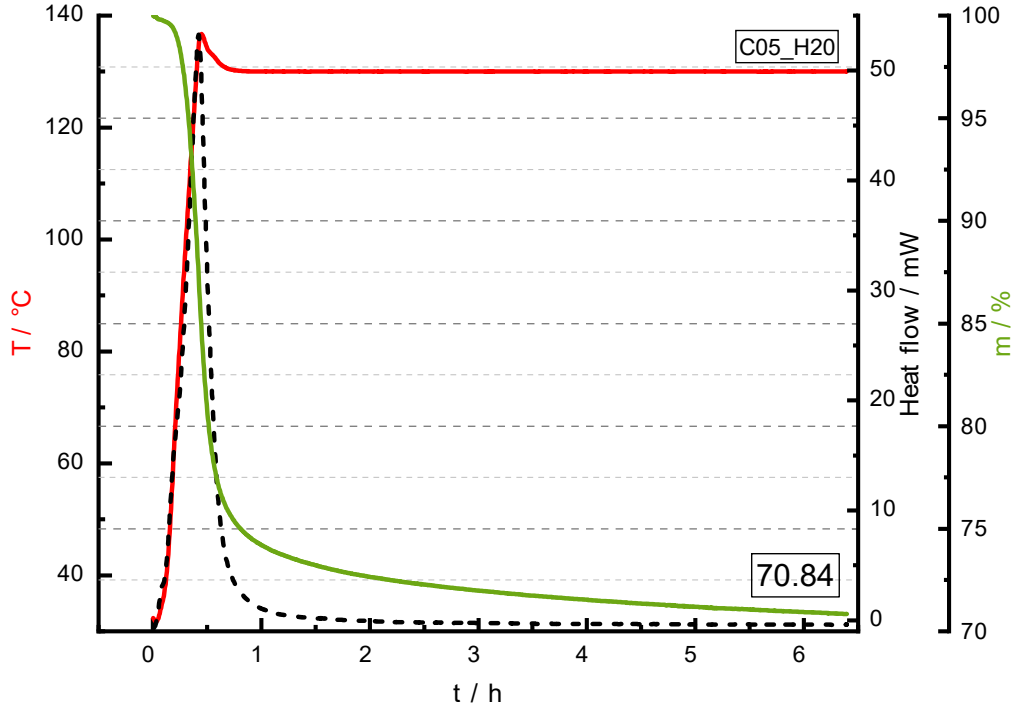

Figure S6. Mass loss during dehydration at 130 °C.

Reaction calorimetry with 30 % relative humidity in nitrogen

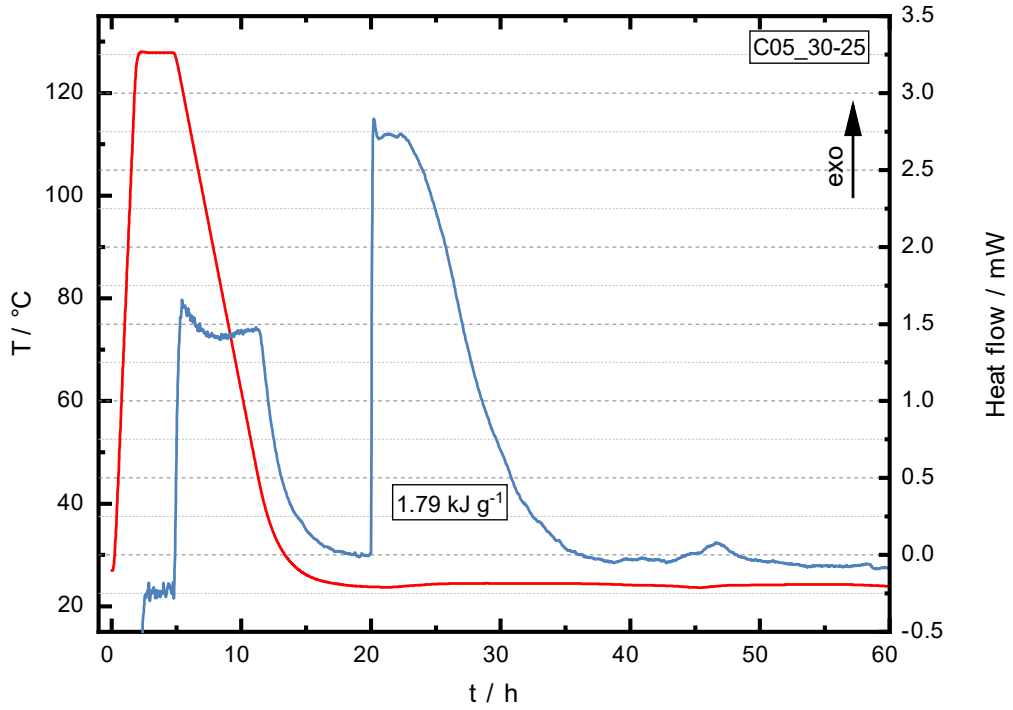

Figure S7. Heat of reaction measured by isothermal calorimetry at 30 % RH.

Thermogravimetric examination of the calorimetric sample

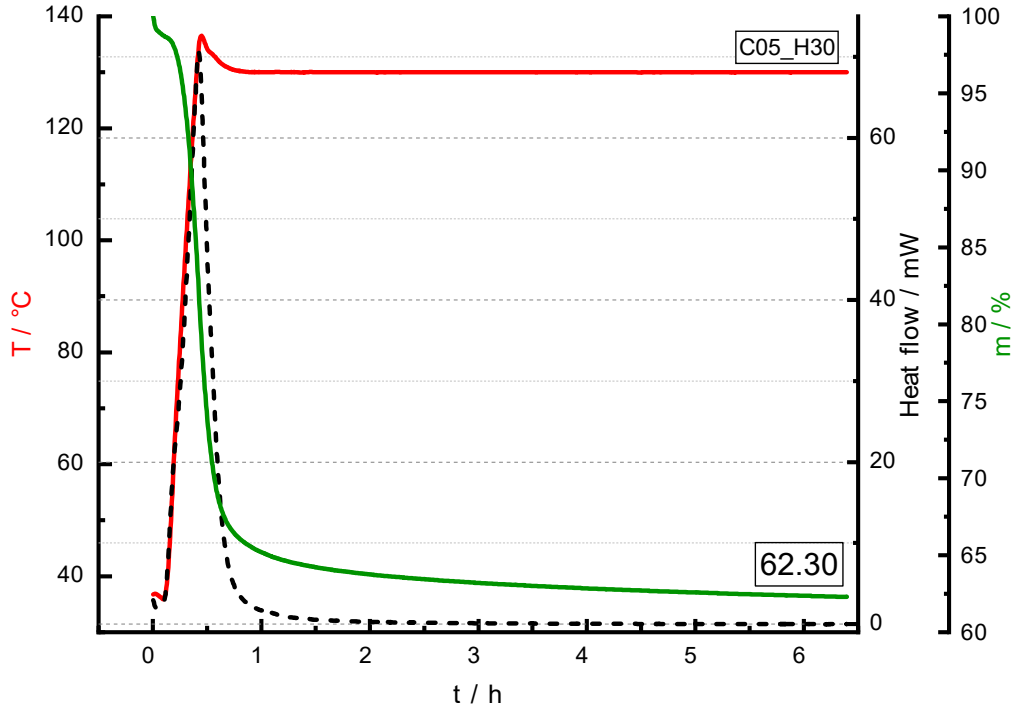

Figure S8. Mass loss during dehydration at 130 °C.

Calcium chloride alginate composite – ten cycles – calorimetric and thermo gravimetric measurement.

Reaction calorimetry with 20 % relative humidity in nitrogen

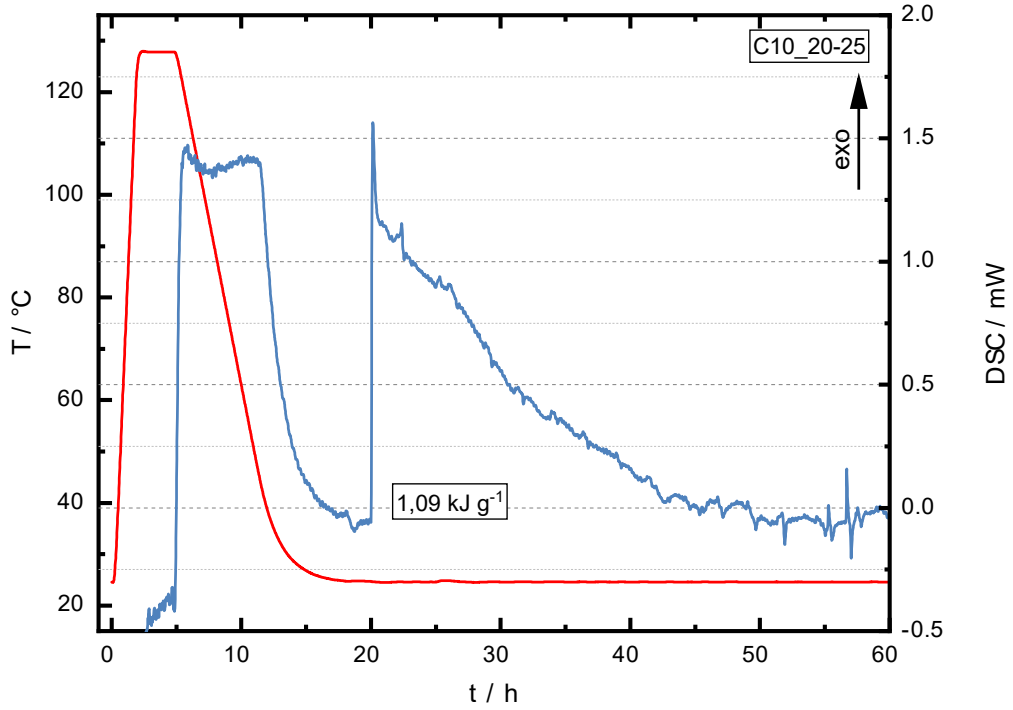

Figure S9. Heat of reaction measured by isothermal calorimetry at 20 % RH.

Thermogravimetric examination of the calorimetric sample

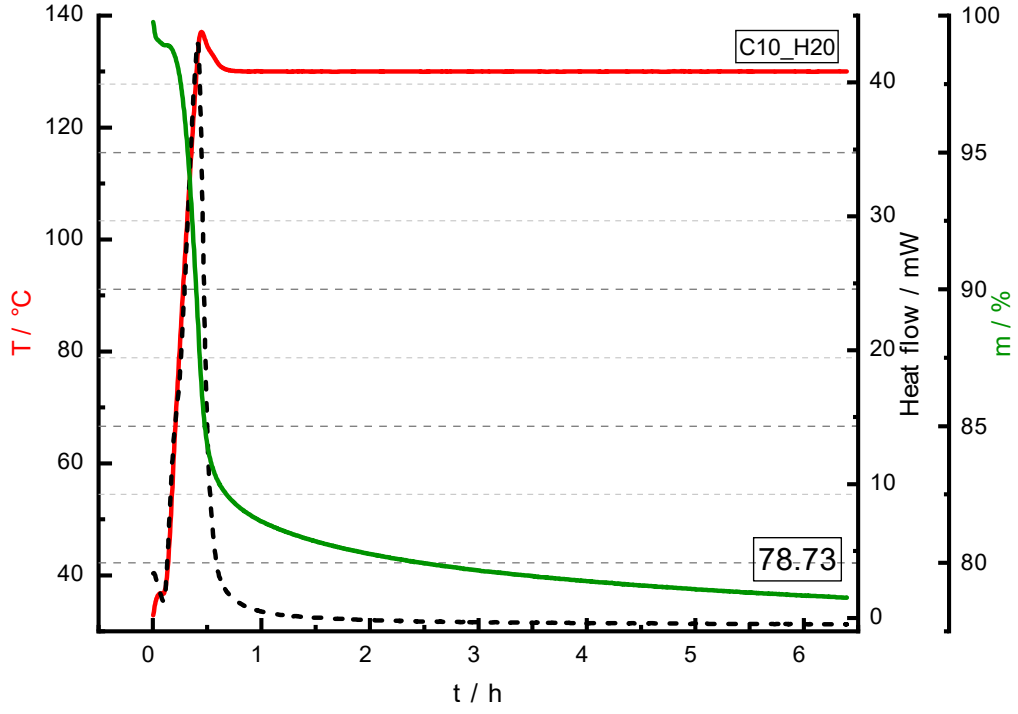

Figure S10. Mass loss during dehydration at 130 °C.

Reaction calorimetry with 30 % relative humidity in nitrogen

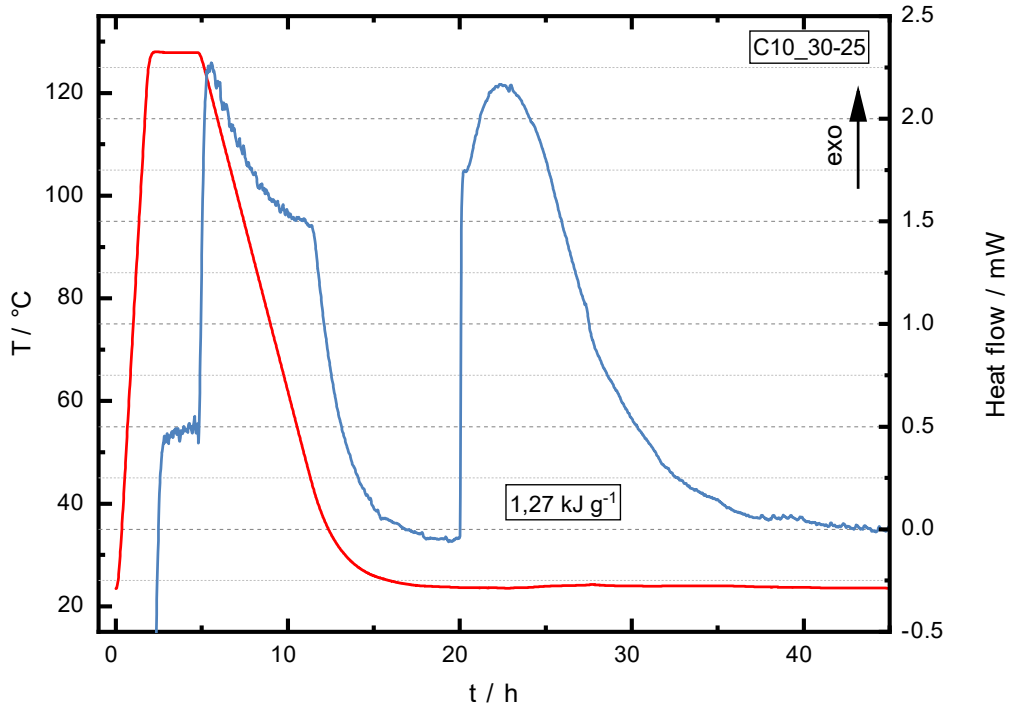

Figure S11. Heat of reaction measured by isothermal calorimetry at 30 % RH.

Thermogravimetric examination of the calorimetric sample

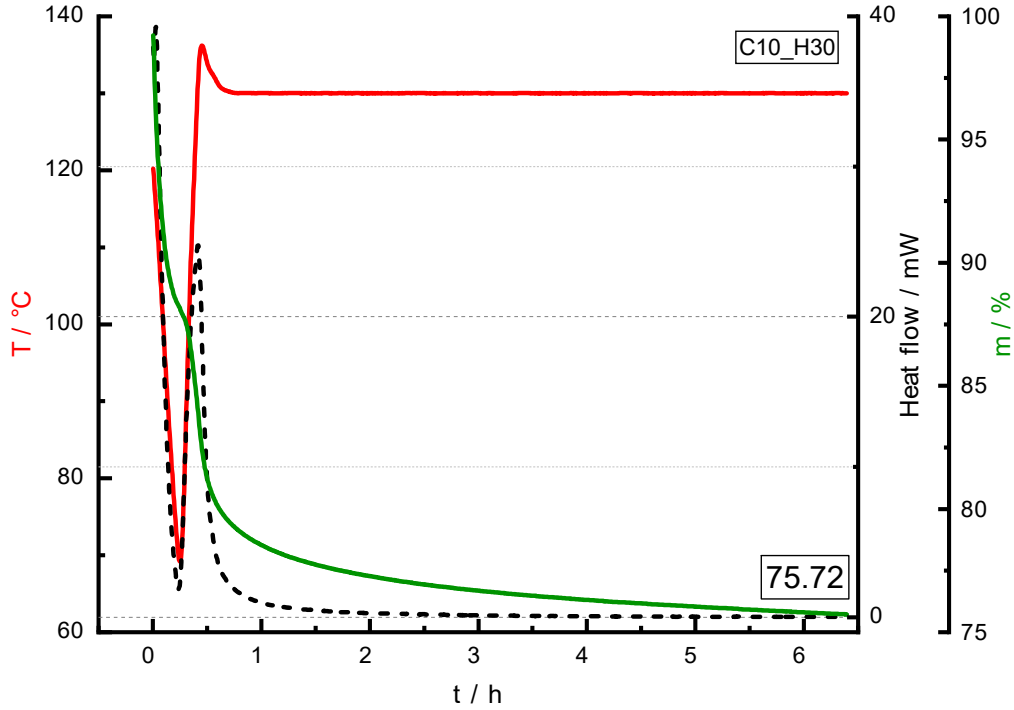

Figure S12. Mass loss during dehydration at 130 °C.

Calcium chloride alginate composite – fifteen cycles – calorimetric and thermo gravimetric measurement.

Reaction calorimetry with 20 % relative humidity in nitrogen

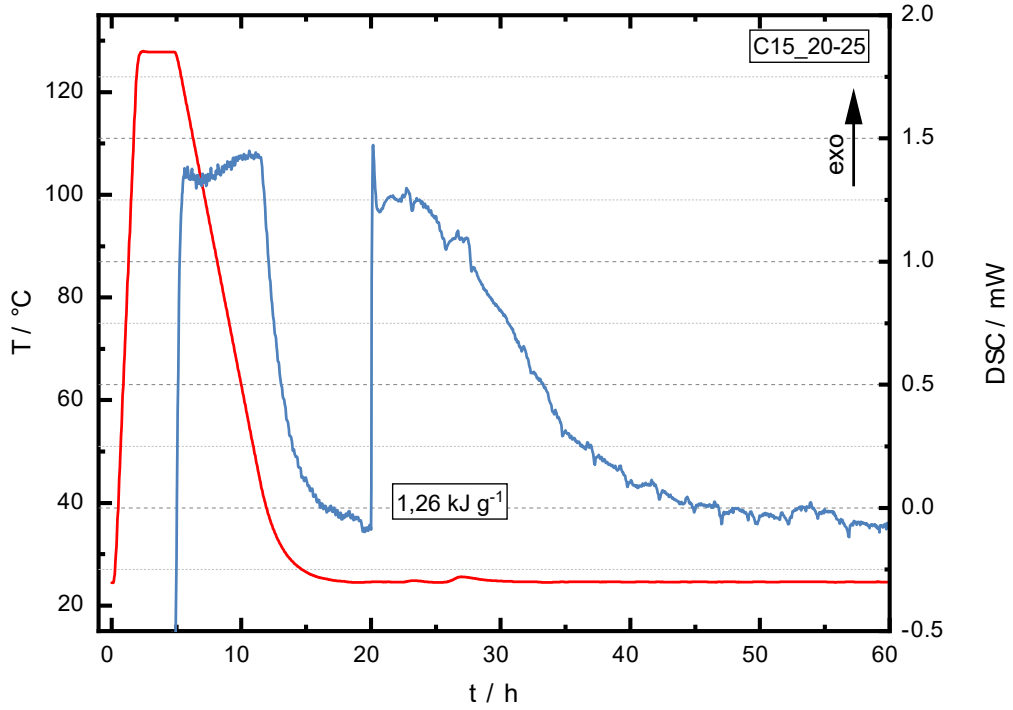

Figure S13. Heat of reaction measured by isothermal calorimetry at 20 % RH.

Thermogravimetric examination of the calorimetric sample

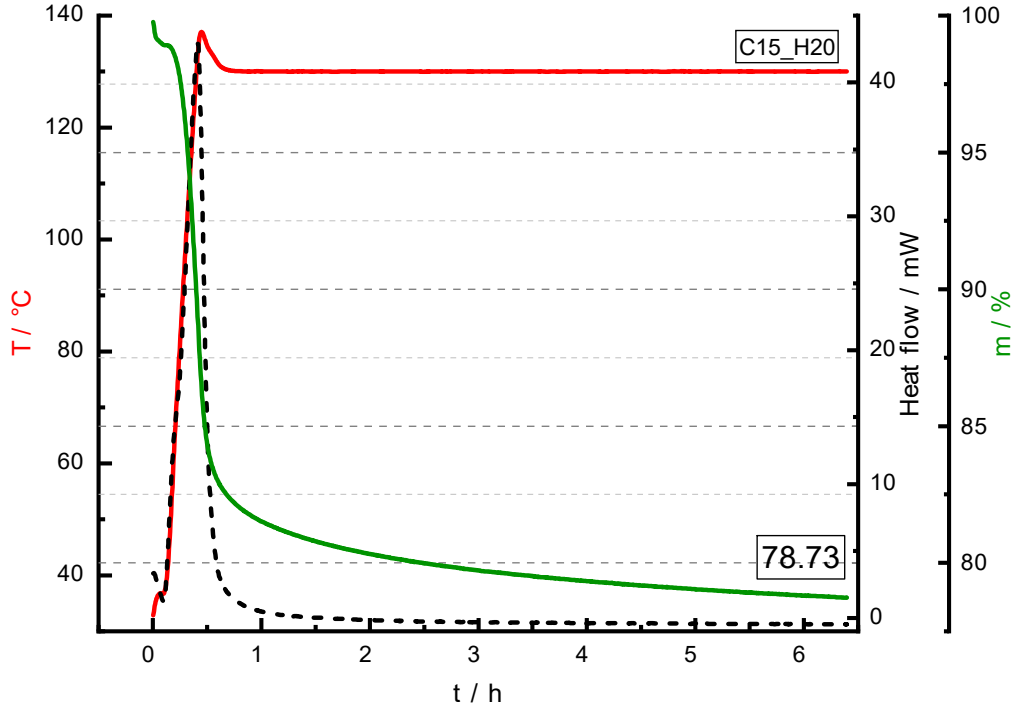

Figure S14. Mass loss during dehydration at 130 °C.

Reaction calorimetry with 30 % relative humidity in nitrogen

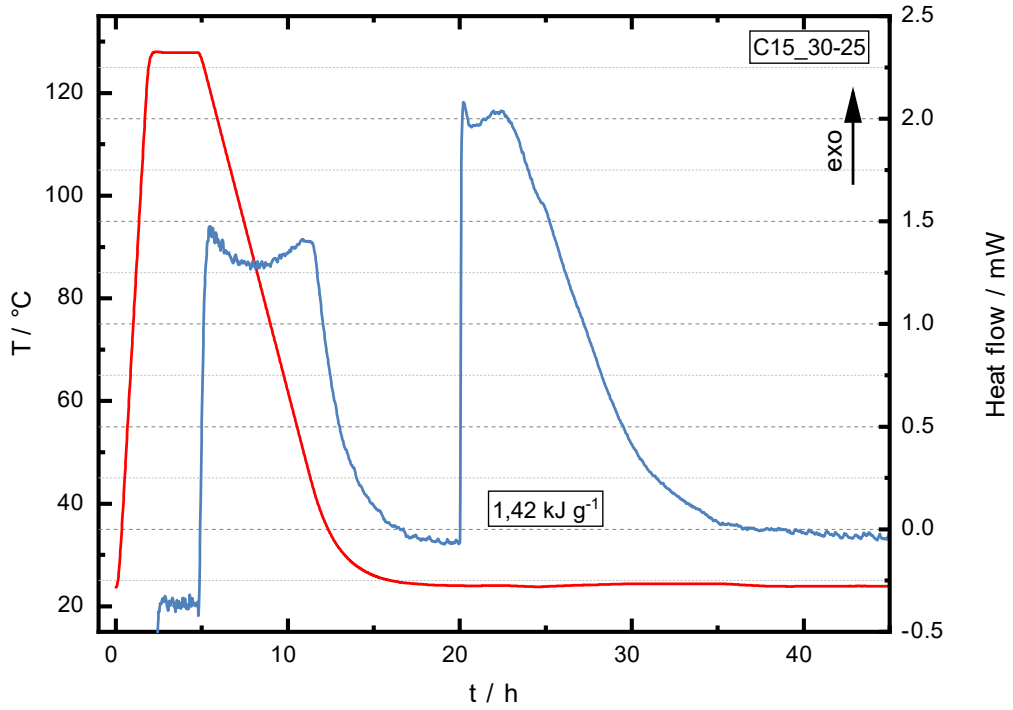

Figure S15. Heat of reaction measured by isothermal calorimetry at 30 % RH.

Thermogravimetric examination of the calorimetric sample

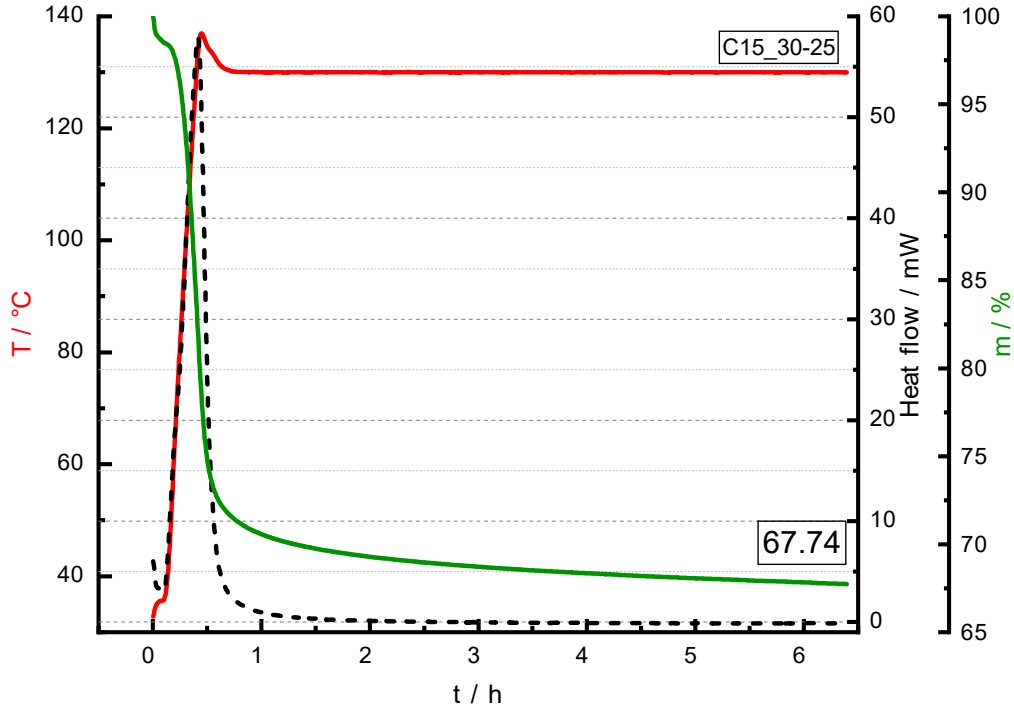

Figure S16. Mass loss during dehydration at 130 °C.