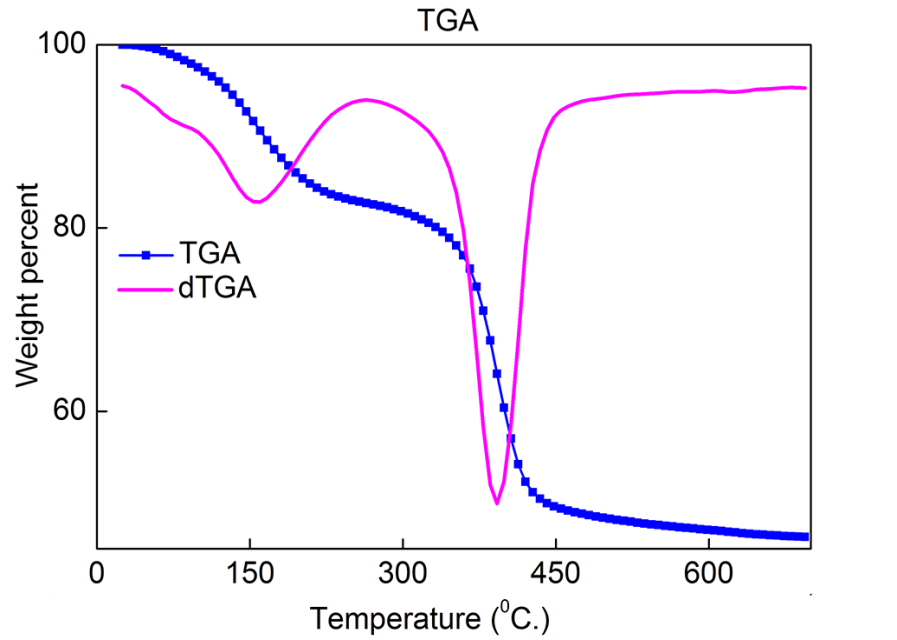
SUPPORTING FIGURE S2 for

A template-free, ultra-adsorbing, high surface area carbonate nanostructure

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**S2. TG analysis of Upsalite**

TG analysis was used to investigate the relative proportions of the constituents in the material. The TGA curve can be seen in Fig. S2 where a rapid weight loss, corresponding to the decomposition of the magnesium carbonate to MgO,1 is observed at ~390 °C in the dTGA curve. Based on the molar fraction of released CO2 during decomposition at ~450 °C, the relative weight ratio between residual MgO and magnesium carbonate in Upsalite was found to be 1:6 and the corresponding molar ratio 1:2.8. The TG analysis also shows a major weight loss with maximum at 160 °C that is due to the loss of physisorbed water and possible remaining organic groups. Chemisorbed water does not evaporate until the temperature reaches 300 °C,[43](#_ENREF_43) thus TGA further establishes the anhydrous character of Upsalite.



**Figure S2.** Thermal Gravimetric Analysis of Upsalite. TGA (blue) and dTGA (pink) curves for Upsalite.

**SUPPORTING REFERENCES**

1 Botha, A.; Strydom, C. A. Dta and Ft-Ir Analysis of the Rehydration of Basic Magnesium Carbonate. *J. Therm. Anal. Calorim.* **2003,** *71*, 987-995.