

Supplementary Materials: Reduced Reactivity of Amines against Nucleophilic Substitution via Reversible Reaction with Carbon Dioxide

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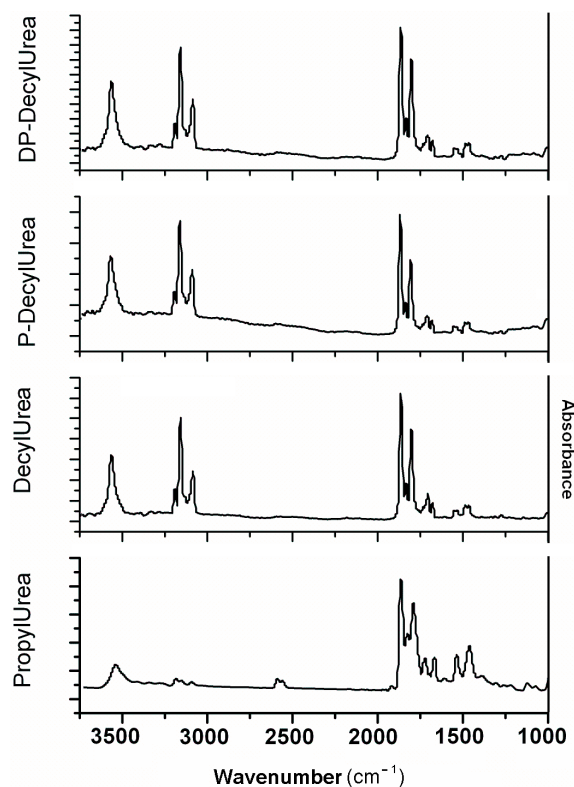


Figure S1. ATR-FTIR of *n*-phenyl, *n*-alkyl ureas showing the similar absorption spectra and characteristic carbonyl and secondary amine peak.

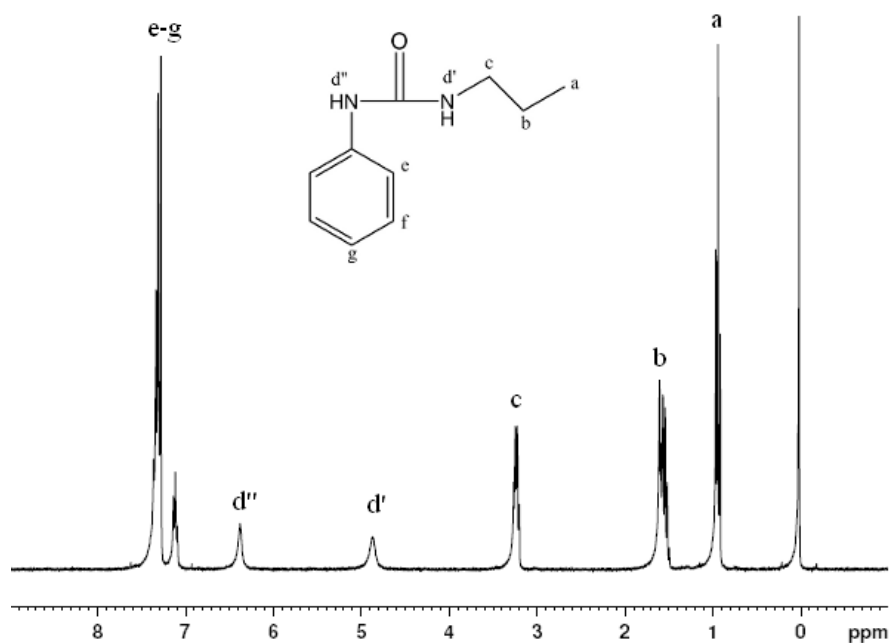


Figure S2. ^1H -NMR of *n*-phenyl, *n*-propyl urea. δ = 1.0 (t, 3H), 1.6 (m, 2H), 3.3 (t, 2H), 4.9 (s, 1H), 6.4 (s, 1H), 7.1–7.5 (5H).

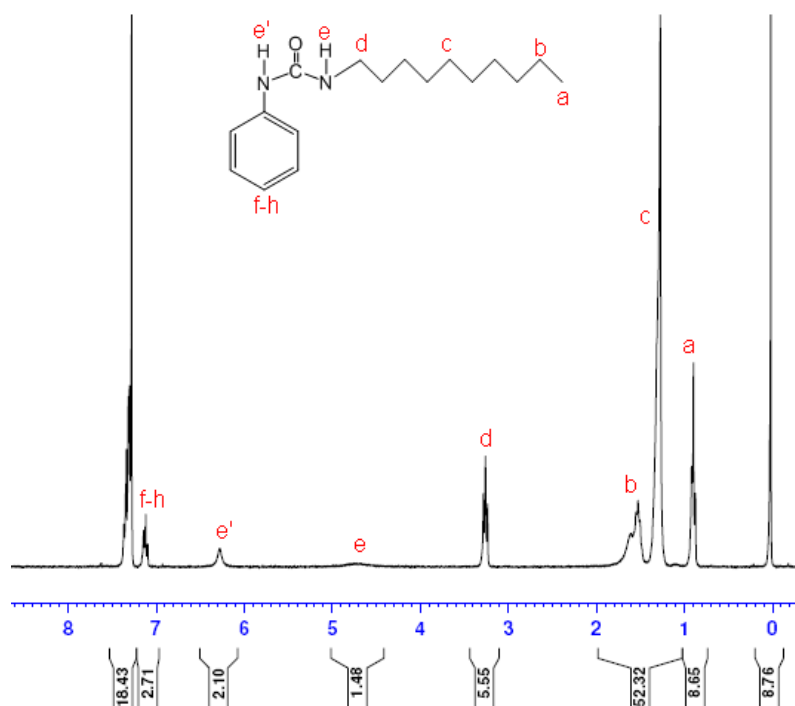


Figure S3. ^1H NMR of *n*-phenyl, *n*-decyl urea.

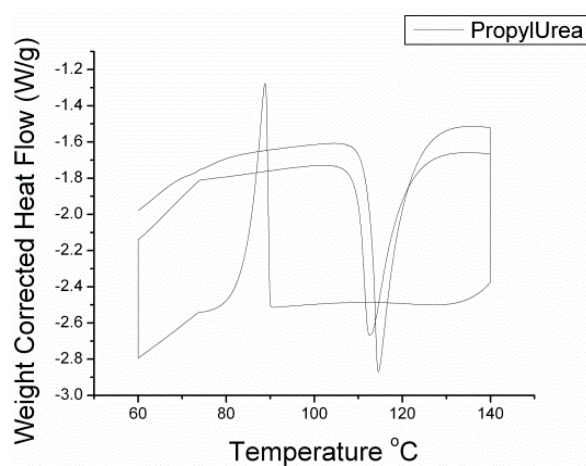


Figure S4. DSC spectra of *n*-propyl urea at ramp rate 5 °C per minute to 140 °C followed by equilibration to 60 °C and repeated heating.

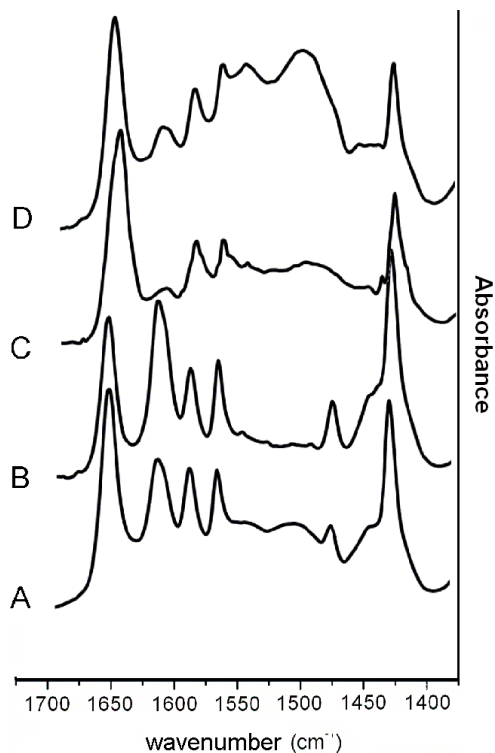


Figure S5. ATR-FTIR spectra of non-protected BP reactions at 3 h (A) and at 12 h (B). ATR-FTIR of protected BP reaction at 3 h (C) and at 12 h (D)

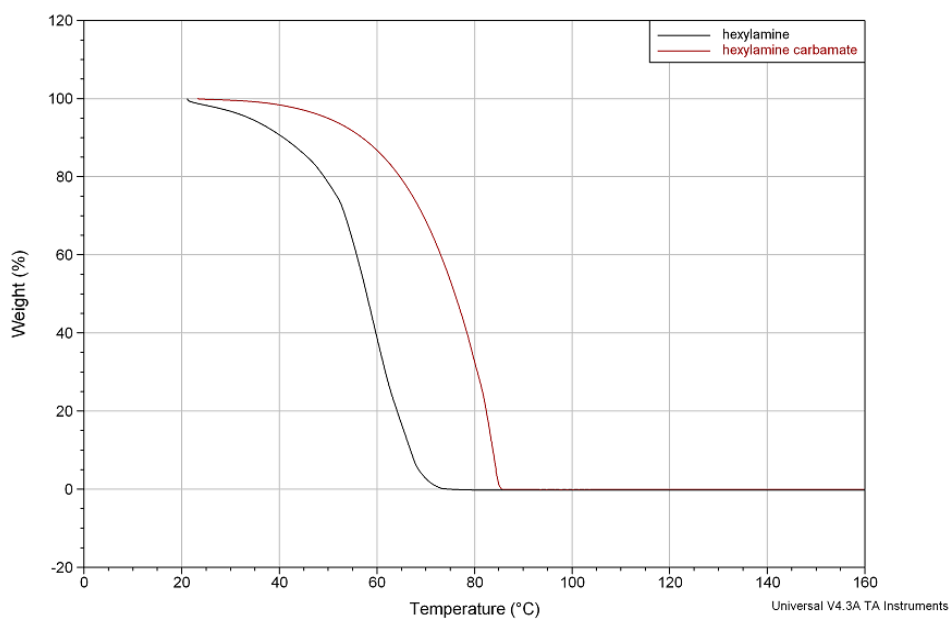


Figure S6. Thermogravimetric analysis is (TGA) of hexylamine and hexylamine carbamate.

The temperature at which the CO₂ evolves from neat hexylammonium carbamate powder is higher than that temperature at which the neat hexylamine will volatilize. Hence, it is very important to control the de-protection technique as some starting amine can be lost due to vaporization. This also applies to a greater extent for propyl amine which is more volatile than the hexylamine.

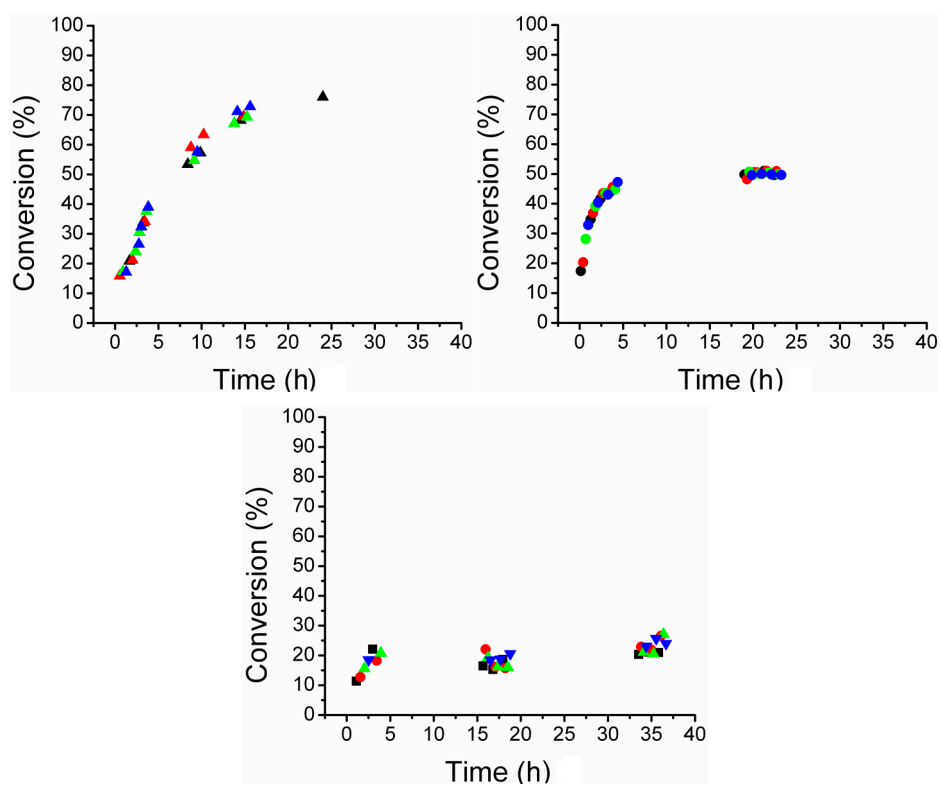


Figure S7. BP conversion % of Non-protected (**top**), Protected (**middle**) and De-protected (**bottom**) reactions monitored in-situ from 4reaction vials.