Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Information†

Template Free and Single Source Precursor Synthesis of Porous Boron Nitride

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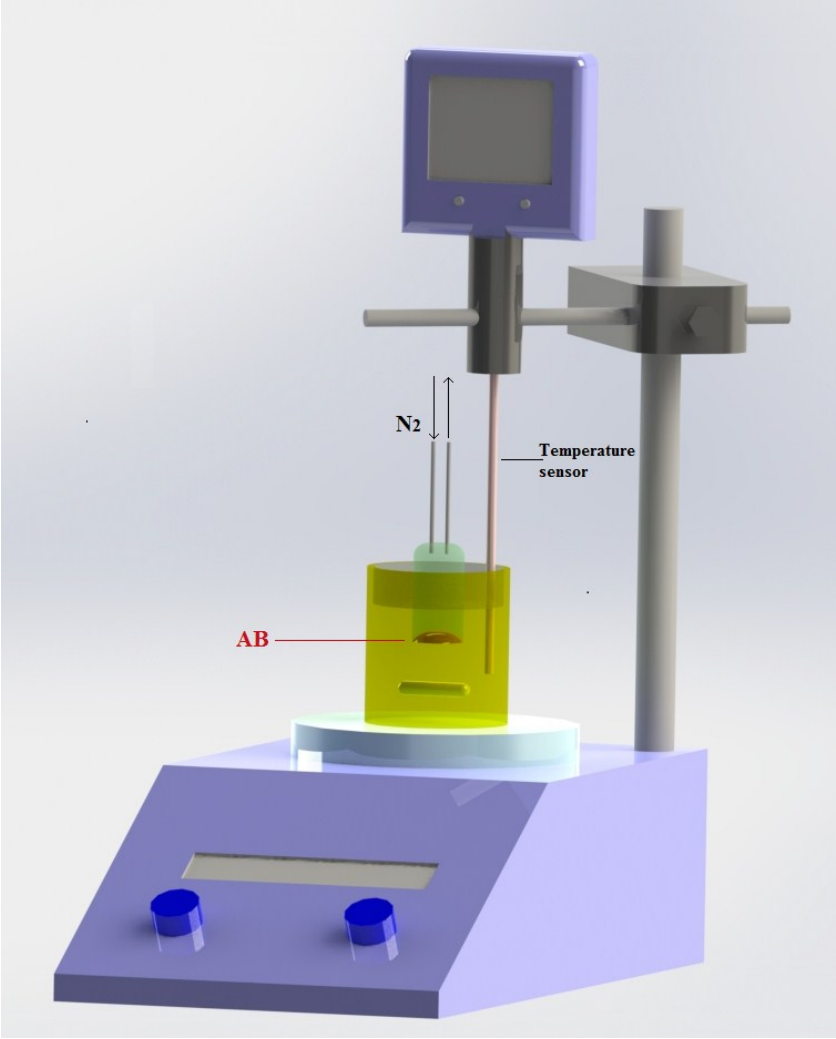
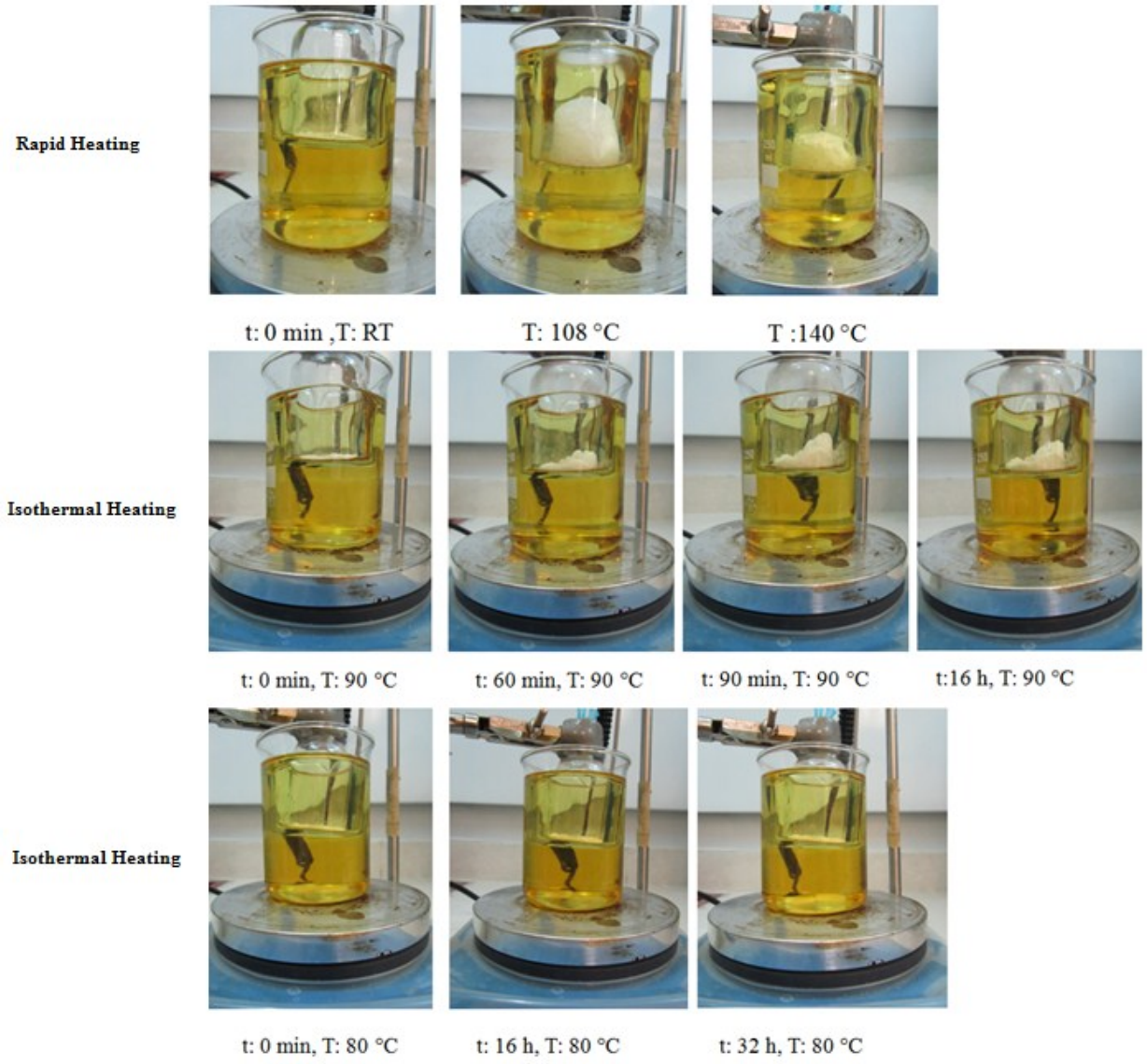
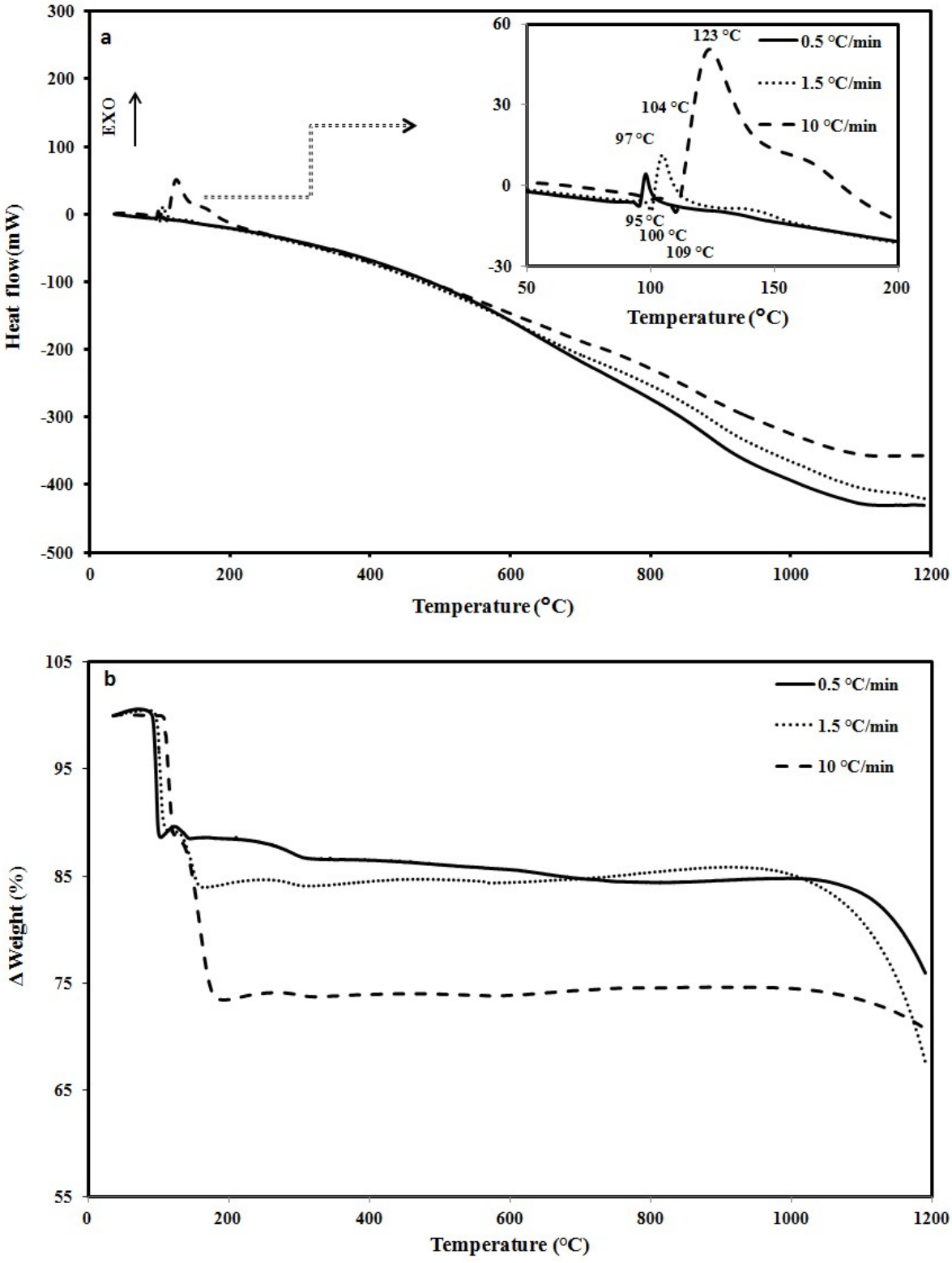


S1. Schematic of AB heating under nitrogen atmosphere in glass vial.



S2. Physical changes in rapid heating and isothermal heating of AB.



S3. a) DSC b) TGA results for AB powder at 0.5, 1.5 and 10 °C/min under N_2 atmosphere.

TGA/DSC analysis was used for AB powders at 0.5, 1.5 and 10 ℃/min under N_2 atmosphere. The endothermic peaks at 109, 100 and 95 ℃ for heating rates of 10, 1.5 and 0.5 ℃/min are assigned to meting point of AB [1]. As it can be seen melting point of AB decreased with lower heating rate. The melting point of AB samples were 109, 100 and 95 ℃ for heating rates of 10, 1.5 and 0.5 ℃/min. However, low heating rate of 0.5 ℃/min was not enough to postpone the melting event of AB. The exothermic peaks of 123, 104 and 97 ℃ are assigned to hydrogen evolution at heating rate of 10, 1.5 and 0.5 ℃/min, respectively [1]. The endothermic peaks at higher temperatures are attributed to complete hydrogen removing from AB. Different total weight loose for different heating rates could be related different decomposition product with different content of hydrogen [2]. S. Frureh *et al* reported that AB complete decomposition and BN formation stars from 1170 ℃ [2]. However, the results in this work are more consistent with Kim group that were reported 1000 ℃ as starting temperature for last step of hydrogen elimination [3]. As it can observed, for all three heating rates, the weight loose was prolonged to 1200 ℃. Therefore, samples were heated to 1300 ℃ to be sure about formation of BN.

1. Zhao, Y., et al., *Effect of Composition on Dehydrogenation of Mesoporous Silica/Ammonia Borane Nanocomposites.* Industrial & Engineering Chemistry Research, 2011, **50**, 10024.
2. Frueh, S., et al., *Pyrolytic Decomposition of Ammonia Borane to Boron Nitride.* Inorganic Chemistry, 2010, **50**, 783.
3. Kim, D.-P., et al., *Synthesis and characterization of poly(aminoborane) as a new boron nitride precursor.* Polymers for Advanced Technologies, 1999, **10**, 702.