

## Supporting Information

### Enhanced thermal, safety and anti-hygroscopicity performance of core-shell ammonium perchlorate with double coating layer

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#### Content

1. Synthesis route of DABT.
2. SEM images of (a) A5, (b) B3 and (c) C3 after stirring in ethanol for 12 h
3. The individual FT-IR spectra of different composite sample.
4. TG and DTG curves of different samples
5. Diagram of the experimental device and photographs of the individual composite samples after the hygroscopicity test.

1. Synthesis route of DABT.

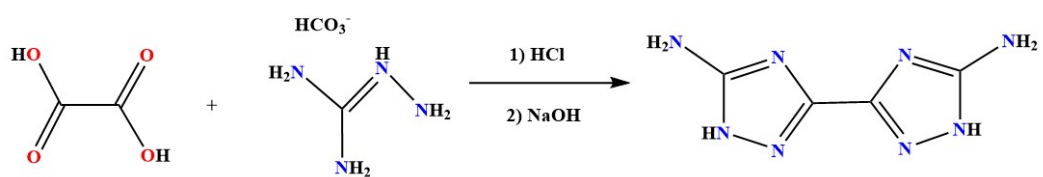


Fig. S1. Synthesis route of DABT.

2. SEM images of (a) A5, (b) B3 and (c) C3 after stirring in ethanol for 12 h

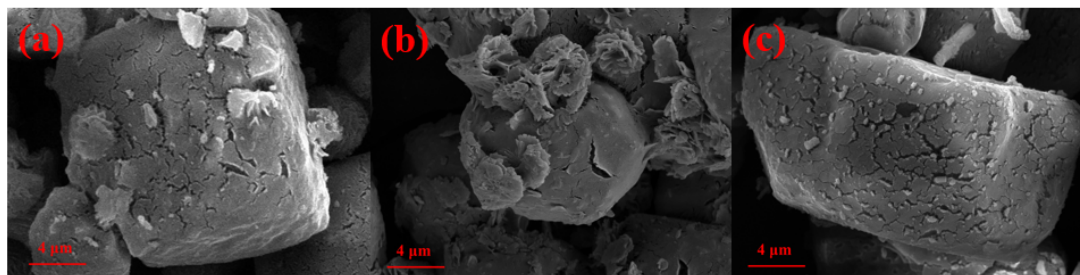


Fig. S2. SEM images of (a) A5, (b) B3 and (c) C3 after stirring in ethanol for 12 h.

3. The individual FT-IR spectra of different composite sample.

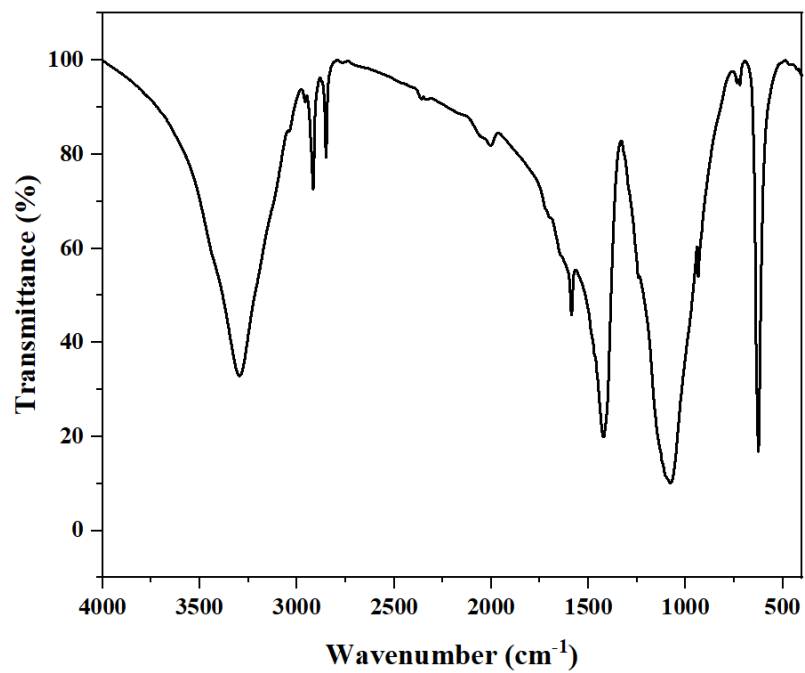


Fig. S3. FT-IR spectra of A5.

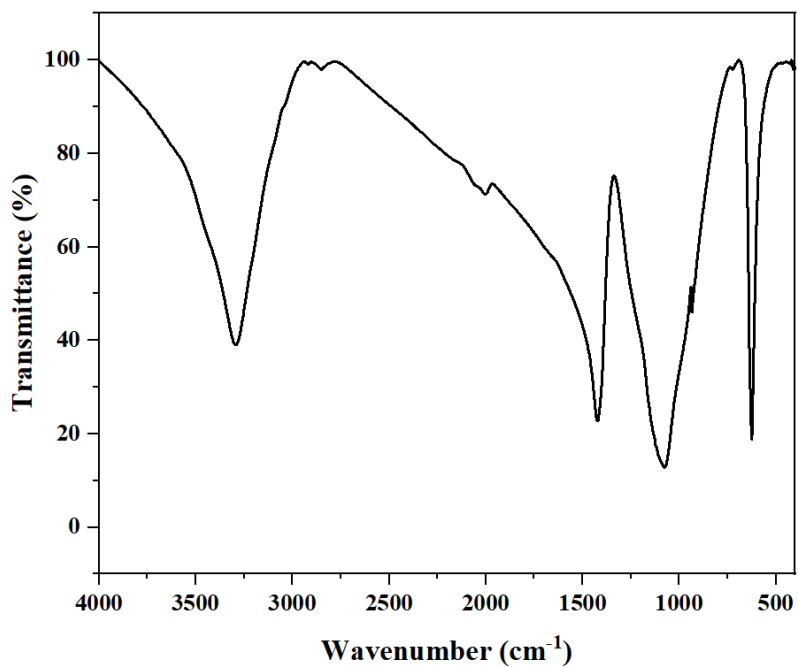


Fig. S4. FT-IR spectra of pure AP.

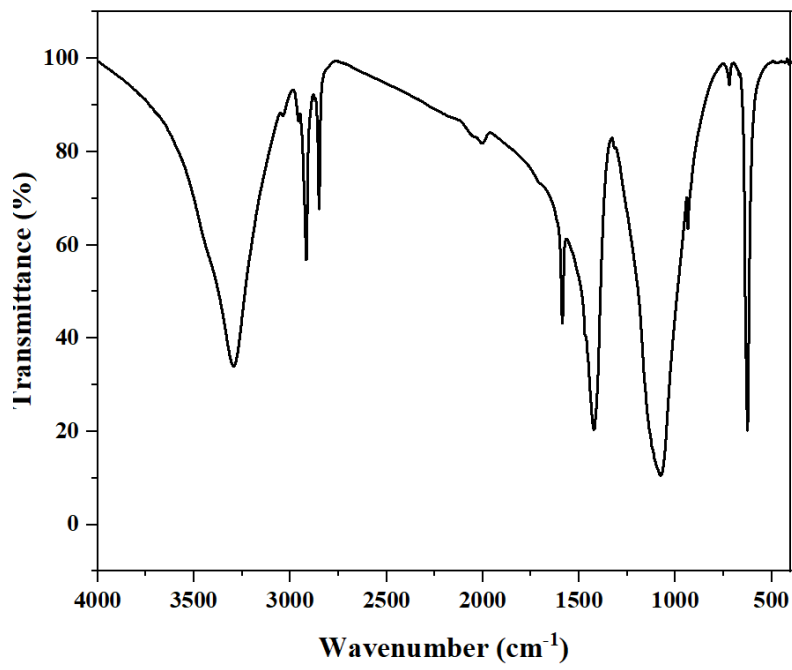


Fig. S5. FT-IR spectra of B3.

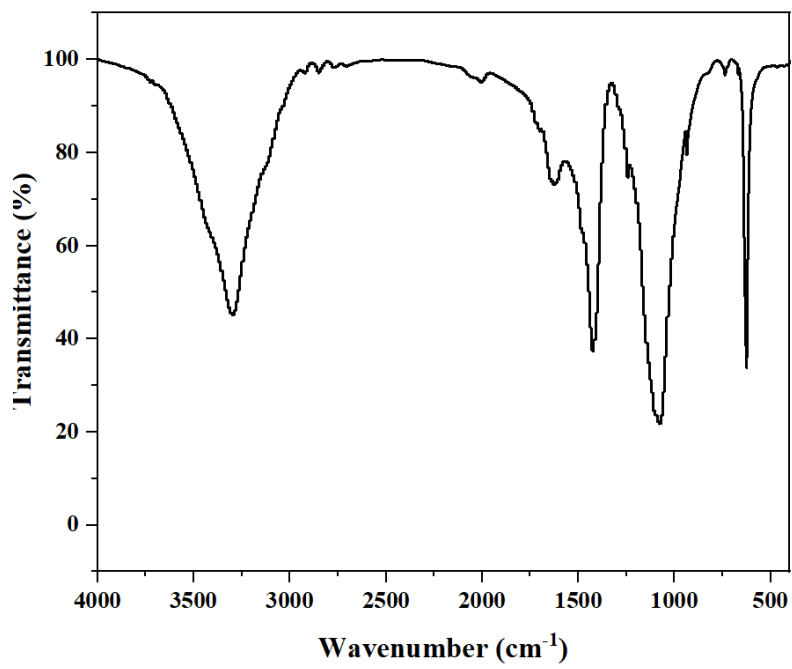


Fig. S6. FT-IR spectra of C3.

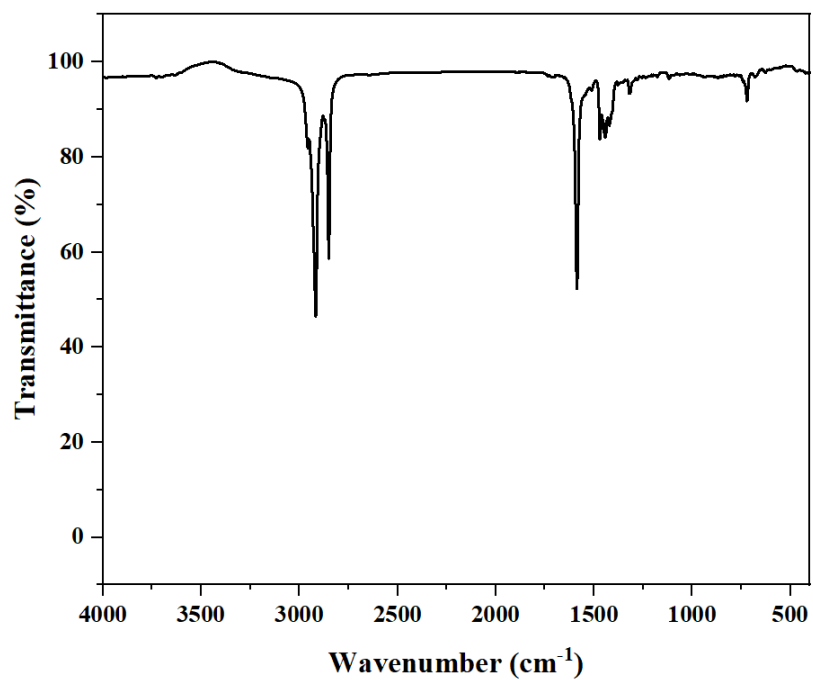


Fig. S7. FT-IR spectra of Cu(Pa)<sub>2</sub>.

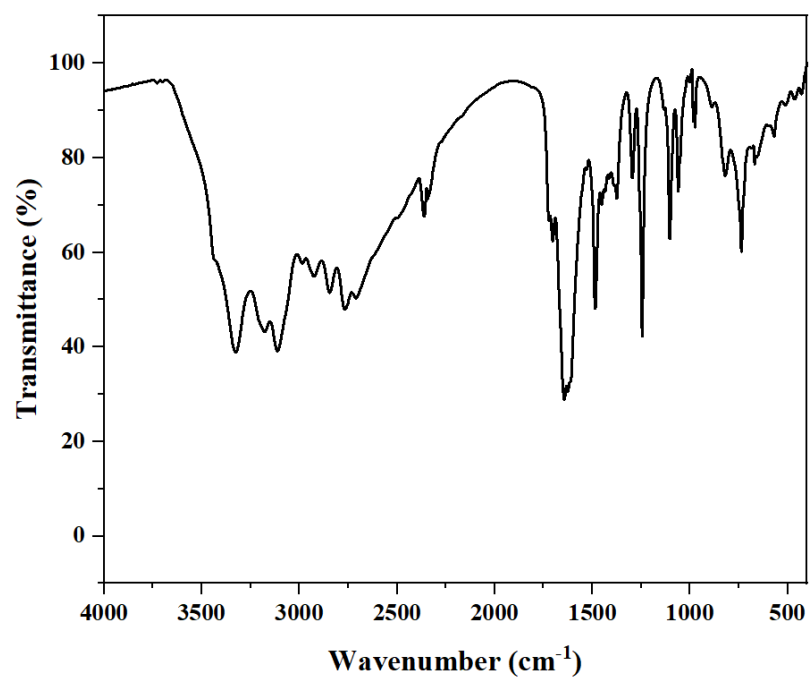


Fig. S8. FT-IR spectra of DABT-Cu.

#### 4. TG and DTG curves of different samples

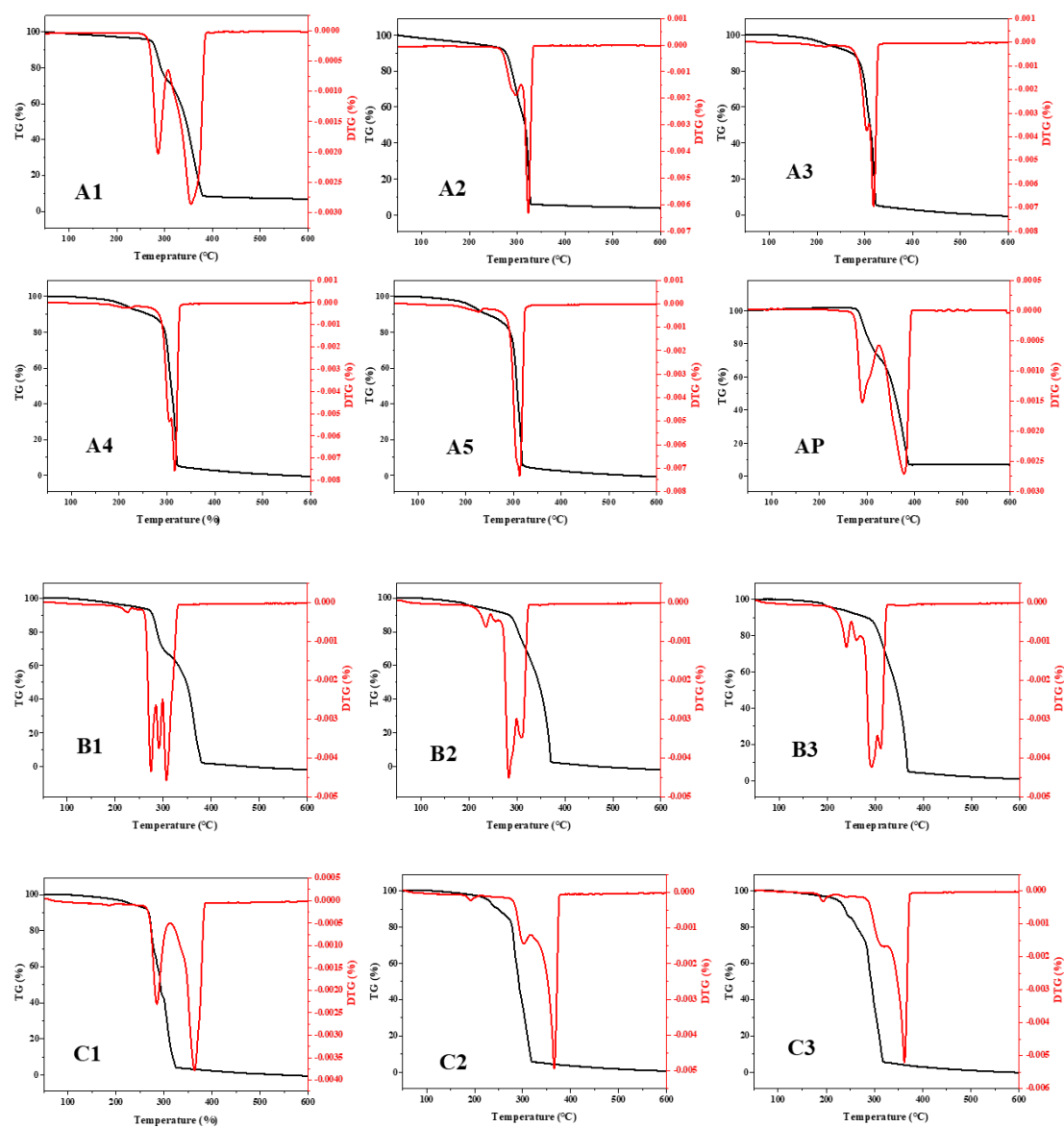


Fig. S9. TG and DTG curves of different samples

5. Diagram of the experimental device and photographs of the individual composite samples after the hygroscopicity test.



Fig. S10. Diagram of the experimental device and photographs of the individual composite samples after the hygroscopicity test.