

Supplementary Material

Construct the α -AlH₃@Polymers Composite with High Safety and Excellent Stability Properties via In-situ Polymerization

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Section 1. The FT-IR spectra of Polystyrene, Polymethyl acrylate, and Polyvinylpyrrolidone.

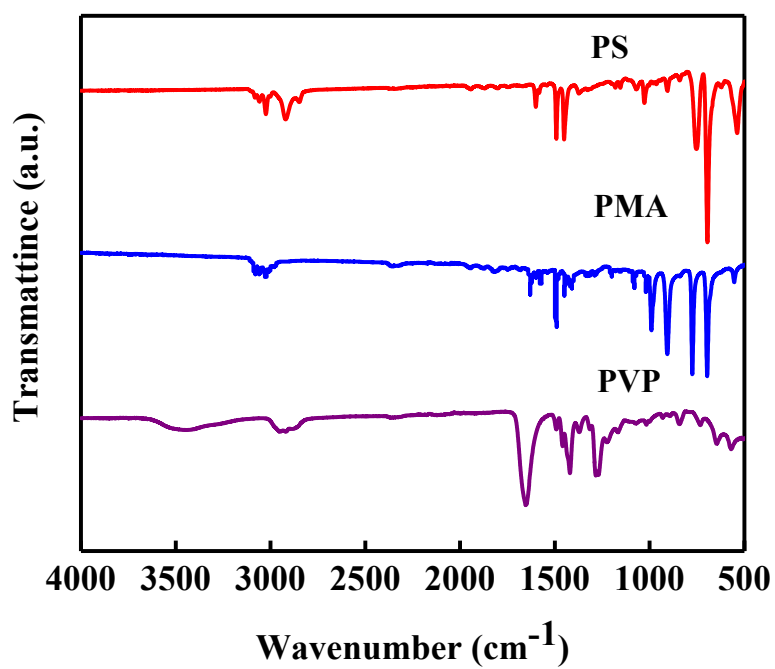


Fig S1. The FT-IR spectra of Polystyrene (PS), Polymethyl acrylate (PMA), and Polyvinylpyrrolidone (PVP).

Section 2. The XPS full spectrum of the α -AlH₃@Polymers composites.

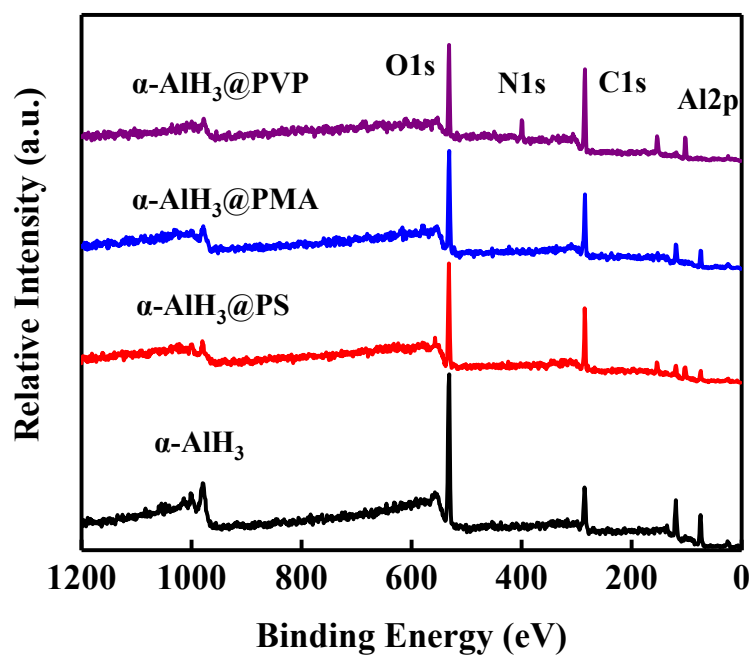


Fig S2. The XPS full spectrum of the α -AlH₃@Polymers composites.

Section 3. SEM image and EDS mapping of the α -AlH₃ and α -AlH₃@Polymers composites.

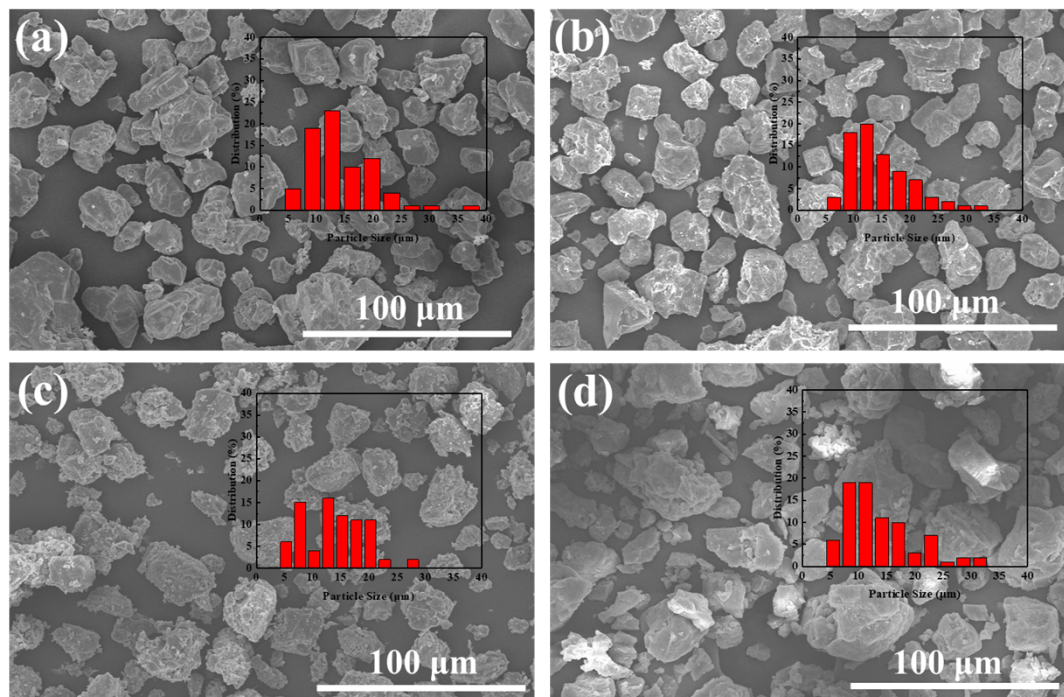


Fig S3. SEM image and size distribution of the α -AlH₃(a), α -AlH₃@PS(b), α -AlH₃@PMA(c), and α -AlH₃@PVP composites.

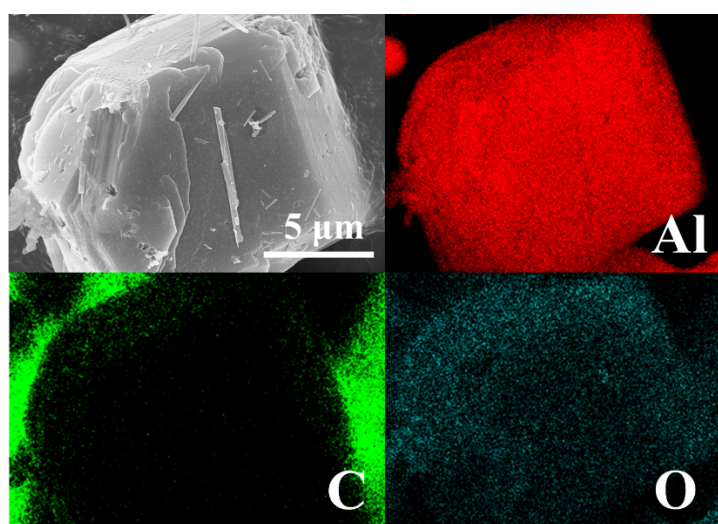


Fig S4. EDS mapping of α -AlH₃.

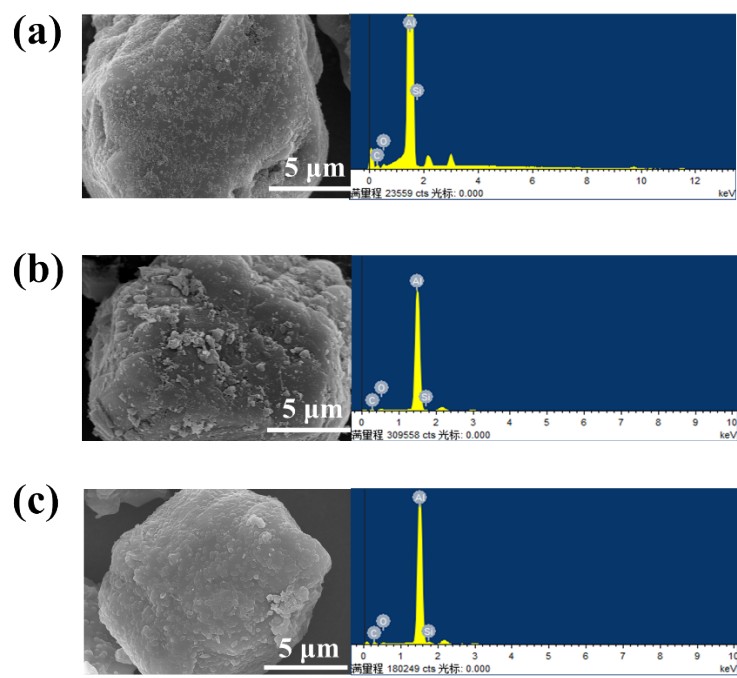


Fig S5. EDS analysis of $\alpha\text{-AlH}_3\text{@PS}$ (a), $\alpha\text{-AlH}_3\text{@PMA}$ (b), and $\alpha\text{-AlH}_3\text{@PVP}$ (c) surface element content.

Section 4. TG curves of the α -AlH₃ and α -AlH₃@Polymers composites.

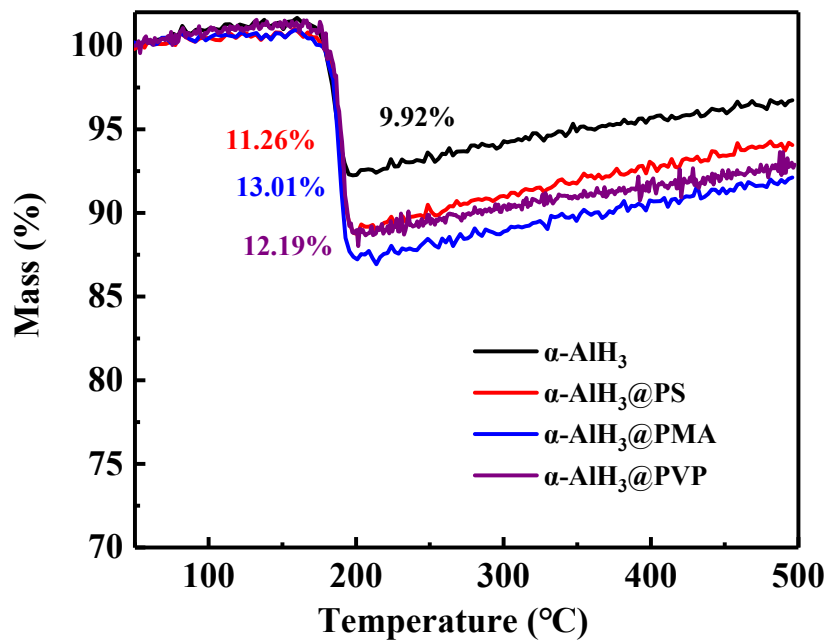


Fig S6. TG curves of the α -AlH₃ and α -AlH₃@Polymers composites at 10.0 °C/min heating rates.

Section 5. DSC curves of the α -AlH₃ and α -AlH₃@Polymers composites.

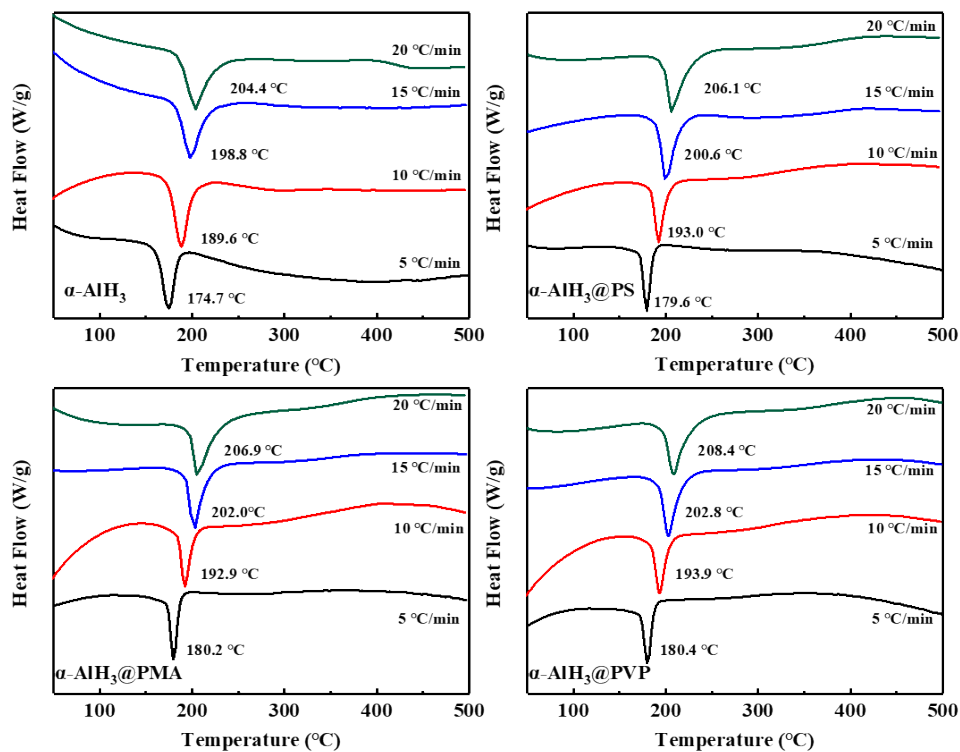


Fig S7. DSC curves of the α -AlH₃ and α -AlH₃@Polymers composites at different heating rates (5.0, 10.0, 15.0, and 20.0 °C/min).