## **Electronic Supplementary Information**

## Dropwise cooling crystallization of ammonium perchlorate in

## gas-liquid two-phase suspension systems<sup>†</sup>

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Hubei, China.

c. Gansu Yinguang Chemistry Corporation, Norinco Group, Baiyin, Gansu, China. E-mail: *chhh42792@sina.cn*  1. The cooling pattern for the preparation of AP by double decomposition reaction.



Fig.S1 The cooling pattern for the preparation of AP by double decomposition reaction.

2. The particle size distribution curves of AP crystals crystallized at different flow rates of gas-phase medium.



Fig.S2 Particle size distribution curves of AP crystals crystallized at (a)  $0 \text{ L} \cdot \text{min}^{-1}$ ; (b) 3.5 L $\cdot$ min<sup>-1</sup>; (c) 7 L $\cdot$ min<sup>-1</sup>; (d) 10.5 L $\cdot$ min<sup>-1</sup>.

## 3. The particle size distribution curves of AP crystals crystallized at different mixing methods.



Fig.S3 Particle size distribution curves of AP crystals crystallized at the stirring rate of (a) 100 rpm; (b) 500 rpm. (c) and (d) are the particle size distribution curves of AP crystallized under ultrasonic power of 125W and 225W.





Fig.S4 Particle size distribution curves of AP crystals crystallized at (a) 0.5 ml·min<sup>-1</sup>; (b) 1.0 ml·min<sup>-1</sup>; (c) 1.5 ml·min<sup>-1</sup>; (d) 3.0 ml·min<sup>-1</sup>; (e) 4.5 ml·min<sup>-1</sup>.