

ARTICLE

Supporting information

Preparation of porous ammonium dinitramide crystals and efficient catalytic decomposition of corresponding iron oxide assembled composite particles

Yuanlu Cui^a, Chong Teng^a, Jingjing Li^b, Zheng Huo^a, Kai Xin^a, Jinxian Zhai^a, Rongjie Yang^{a,*}

^aSchool of Materials Science and Engineering, Beijing Institute of Technology, Beijing 100081, China.

^bChina Ordnance Industrial Standardization Research Institute, Beijing 100089, China.

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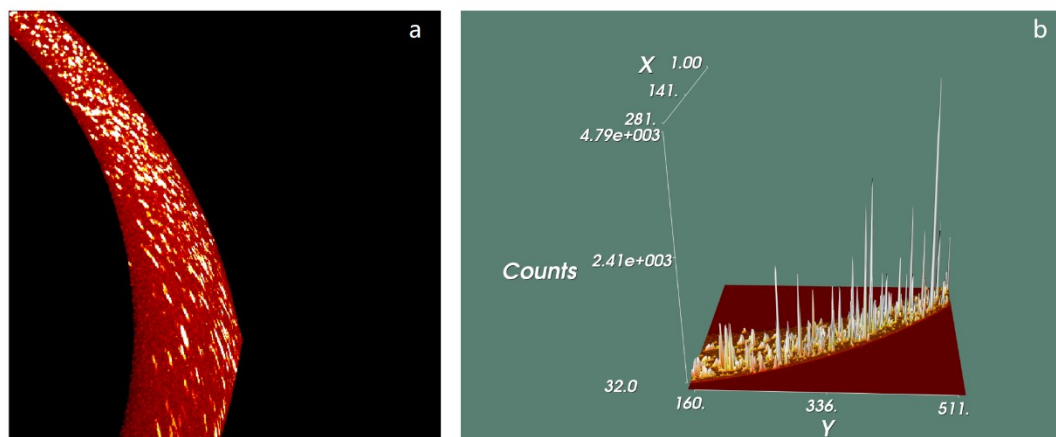


Figure S1 Diffraction results of spherical ADN single crystals with particle sizes larger than 300 μm . a: diffraction ring pattern b: 3D mode view.

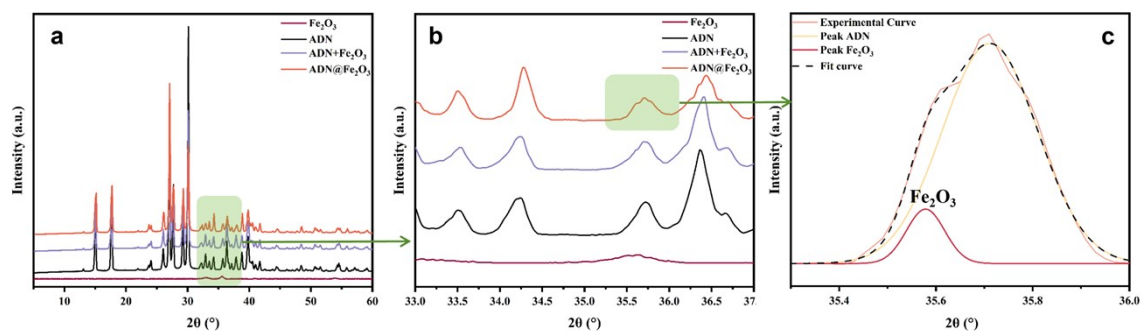


Figure S2 XRD diffraction pattern of Fe_2O_3 , ADN, $\text{ADN}+\text{Fe}_2\text{O}_3$ and $\text{ADN}@\text{Fe}_2\text{O}_3$.

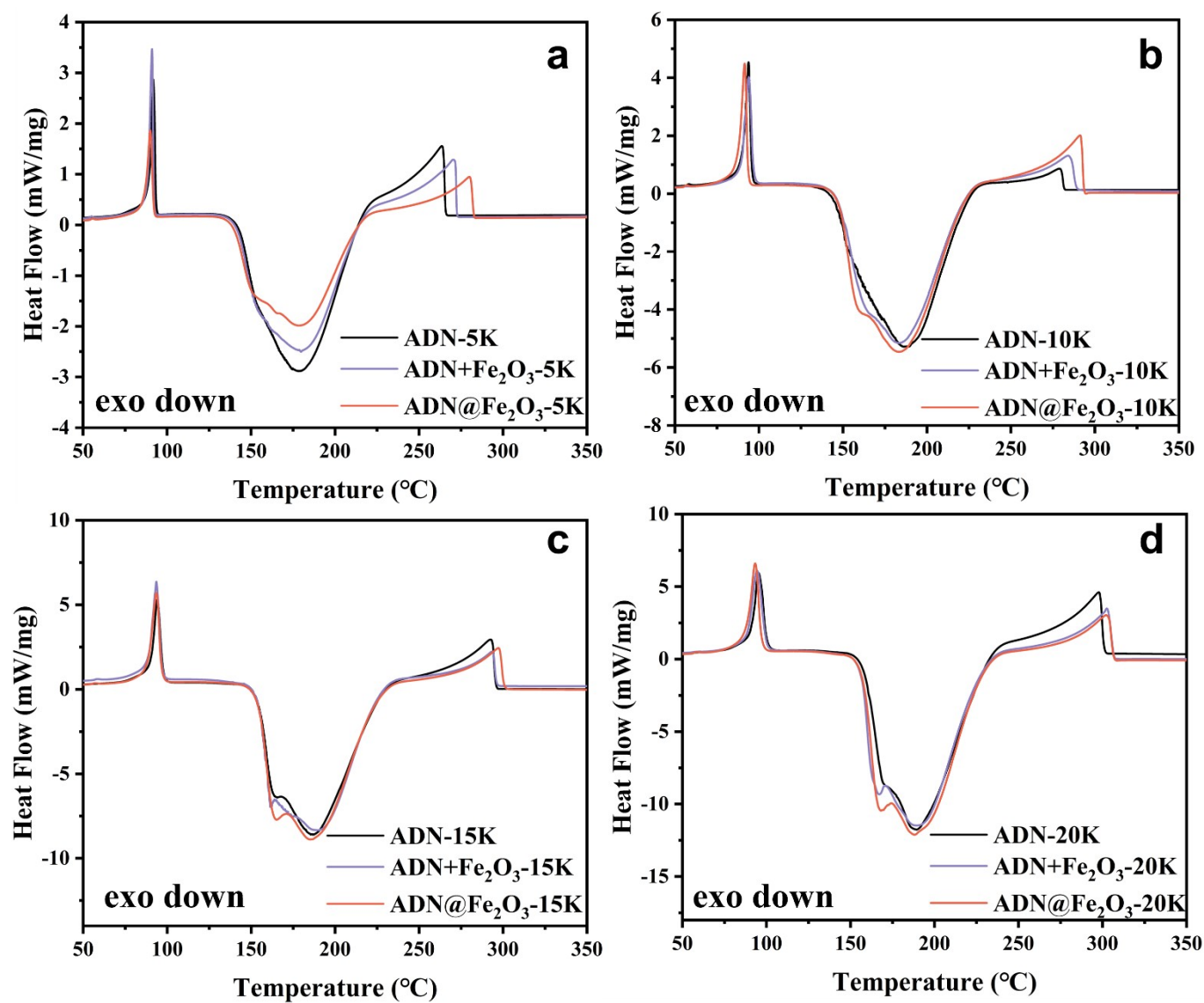


Figure S3 DSC curves of ADN, ADN+Fe₂O₃ and ADN@Fe₂O₃ under different heating rates.

Using the Ozawa method to process the results of thermal decomposition and obtain the changes in the E_a of the sample decomposition process is also a commonly used thermal decomposition analysis method. The Ozawa formula is as follows:

$$\lg \beta = \lg \left[\frac{AE}{RG(\alpha)} \right] - 2.315 - 0.4567 \frac{E_a}{RT}$$

In the equation, α represents the conversion rate, T is the corresponding temperature for this conversion rate, β is the heating rate, A is the pre-exponential factor, E_a is the global apparent activation energy, and R is the molar gas constant, $G(\alpha)$ depends on the mechanism function. The least squares method is used for linear fitting of ADN, ADN+Fe₂O₃ and ADN@Fe₂O₃ results under different conversion rates, as shown in Figure. S4.

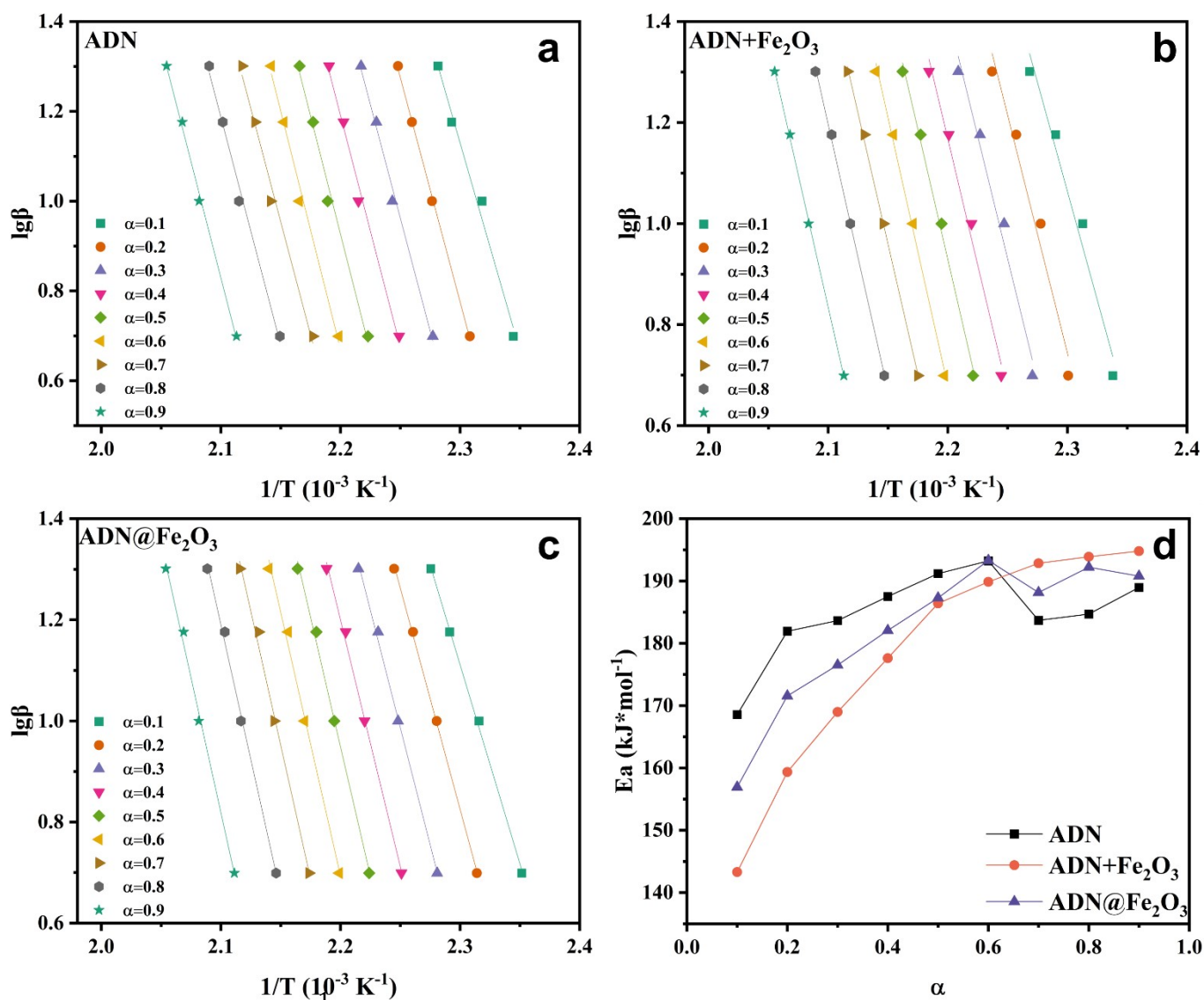


Figure S4 Fitting curves of $\lg \beta$ versus $1/T$ using Ozawa formula :(a) ADN; (b) ADN+Fe₂O₃; (c) ADN@Fe₂O₃; (d) Global apparent activation energy of different samples.