



## Supporting Information

**Please note:**

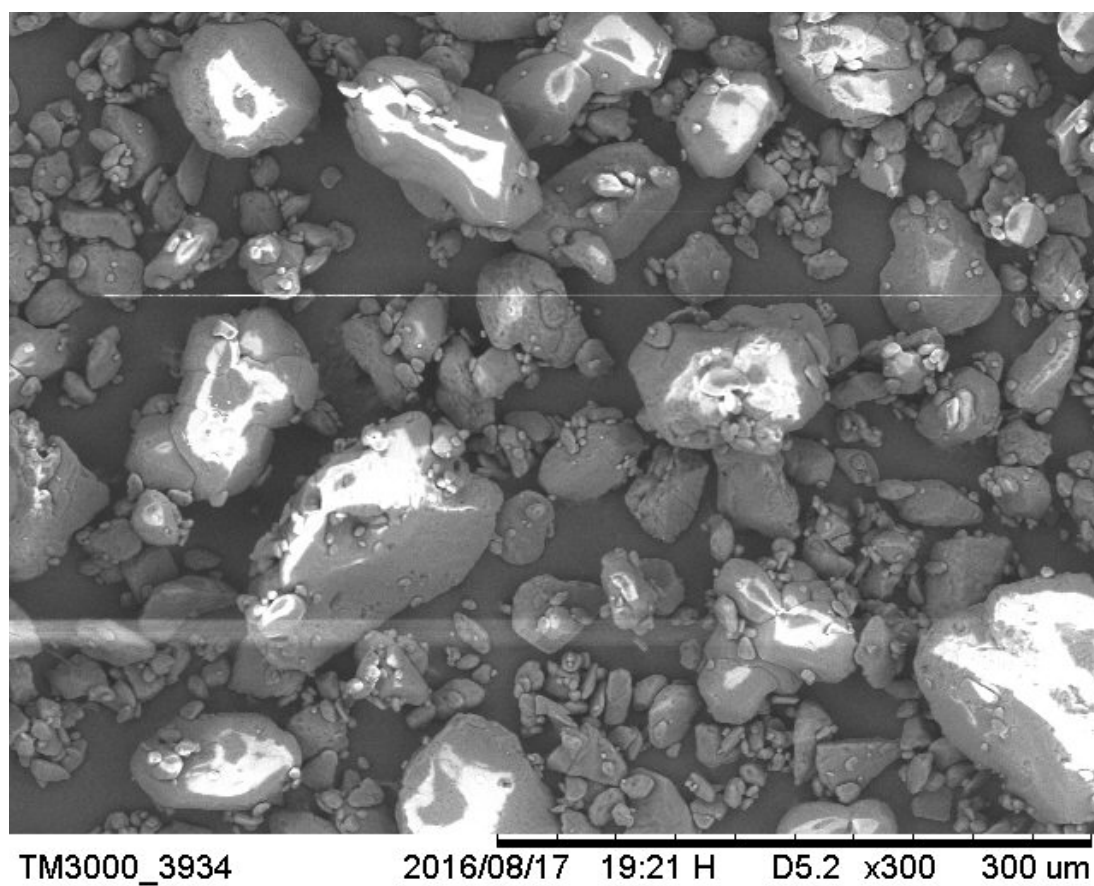
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### **Influence of Polytetrafluorethylene on the Mechanical and Safety Properties of a Composite Modified Double Base Propellant**

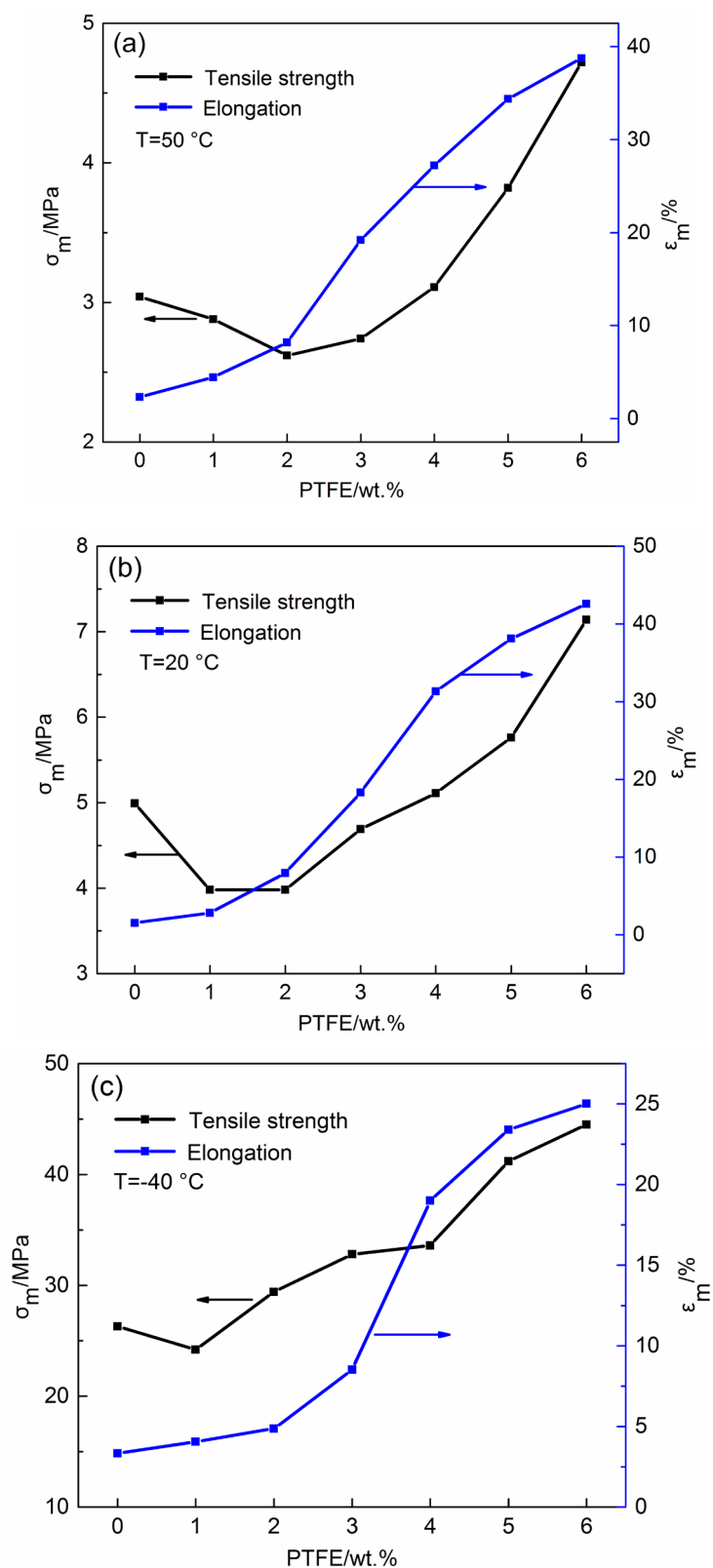
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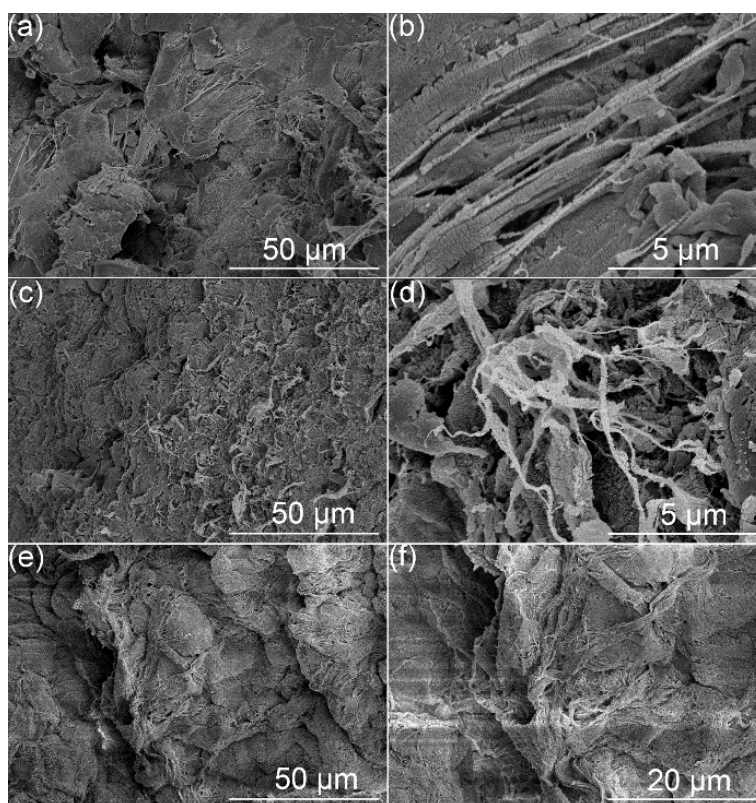
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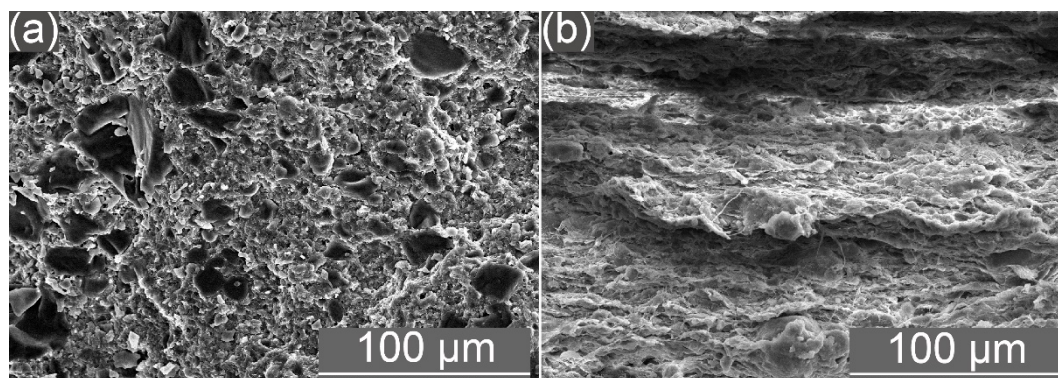
**Figure S1.** SEM image of industrial grade RDX particles



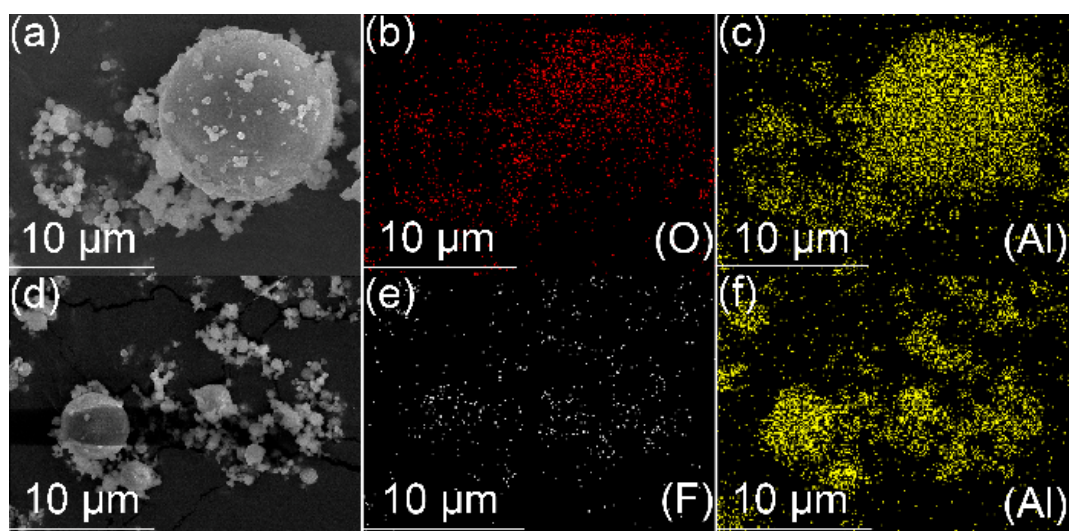
**Figure S2.** Tensile properties of propellant (a)  $50^\circ\text{C}$  (b)  $20^\circ\text{C}$  (c)  $-40^\circ\text{C}$



**Figure S3.** SEM images for dissolved propellant with different PTFE content (a, b) 1 wt.% (c, d) 2 wt.% (e, f) 5 wt.%



**Figure S4.** SEM image of fracture surface of frozen propellant (a) propellant A (b) propellant P-5



**Figure S5.** SEM images and respective elemental map of slag for propellant A (a, b, c) and P-5 (d, e, f)

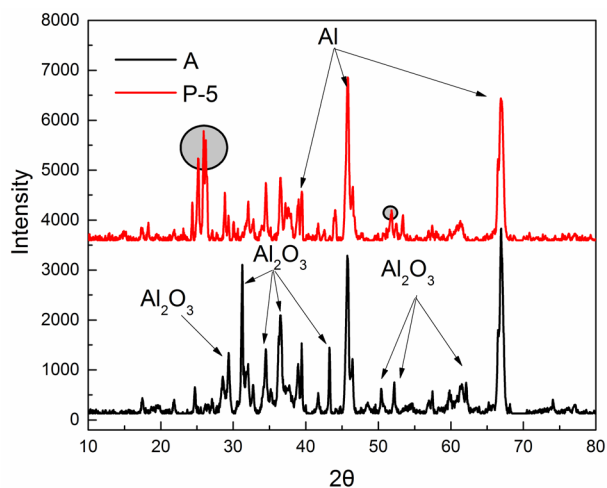
**Table S1.** Element content of collected P-5 propellant slag

Element	Weight percentage	Atom percentage
C K	55.47	65.48
O K	27.84	24.67
F K	4.91	3.67
Al K	11.77	6.18
Amount	100.00	

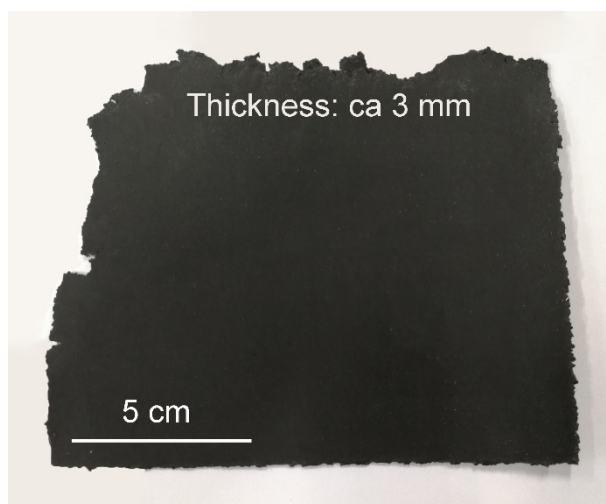
**Table S2.** Reaction enthalpy of stir mixed Al/PTFE

Sample	Theoretical value [ $\text{kJ}\cdot\text{g}^{-1}$ ]	Examined value [ $\text{kJ}\cdot\text{g}^{-1}$ ]
6:1	1.72	2.04
6:2	3.01	3.19
6:3	4.01	4.18
6:4	4.81	4.92
6:5	5.47	5.61
6:6	6.02	6.00
E <sup>a</sup>	8.85 [48, 49]	7.67

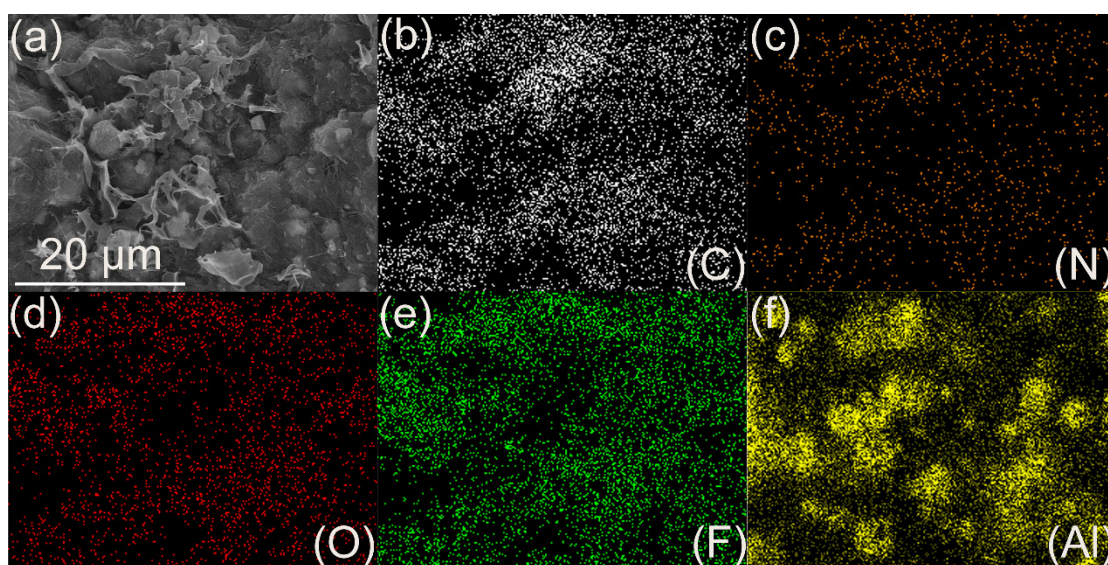
<sup>a</sup> – E: equivalent. The Al/PTFE powders combined in stoichiometric ratio include the fractional alumina content



**Figure S6.** XRD analysis result for slag from propellant A and propellant P-5



**Figure S7.** Optical image of CMDB propellant



**Figure S8.** SEM image (a) and elemental maps (b-f) of dissolved propellant P-2

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