

Supplementary Information

**Preparation and Characterization of Series of High-Energy and Low-Sensitivity
Composites with Different Desensitizers**

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Table S1. FTIR main band distribution of all the materials.

distribution	CL-20	HMX	CL-20/HMX	CL-20/HMX/DOS	CL-20/HMX/PVAc	CL-20/HMX/PVB	main distribution
	3046	3035	3035	3670, 3598, 3050	3037	3674	
	3018	2990	2990	2933, 1738	1735	3039	-CH ₂ - vibration
	1603			1607	1607	1611	
C-H vibration	1586	1524	1527	1564	1568	1560	asymmetric vibration of
	1560			1450	1522	1449	-NO ₂
		1460	1462		1466		
		1430	1433				
		1393	1396	1388	1394	1392	-CH ₂ - deformation
		1348	1348	1317	1320	1319	
		1258	1258	1238	1270	1266	N-N vibration + symmetric
		1198	1203	1210	1240, 1209	1243,1208	vibration of -NO ₂
		1137	1141	1082	1087	1090	
asymmetric vibration of -NO ₂		1088	1087	1051	1049	1048	
	1384			1015	1010	1014	N-N vibration + ring vibration
	1326						
	1244						
	1039		1042				
		964	965				ring vibration
	937	944	941	908	910	907	
C-N vibration	880	871	876	883	876	881	
	850						ring deformation
	828	830	829	835	833	836	
	820						
C-C vibration	758	756	760	763	761	760	
	750			733	731	732	
	721			713	716	711	-NO ₂ deformation
					678	672	
-NO ₂ deformation	648	659	657	652	656	656	ring deformation + out of plane deformation of -NO ₂
		623	626	618	615	611	
	590	597	598	600	609	607	

Table S2. Main Raman band distribution of all the materials.

distribution	CL-20	HMX	CL-20/HMX	CL-20/HMX/DOS	CL-20/HMX/PVAc	CL-20/HMX/PVB	main distribution
	3038.9			3038.2	3035.4	3032.7	
C-H stretching vibration	3023.1	3030.7 3017.0	3020.4	3025.2	3024.5	3025.9	asymmetric stretching vibration of -CH ₂ -
		2984.1	2980.7	2995.1	2997.8	2996.4	symmetric stretching vibration of -CH ₂ -
C-N stretching vibration	1620.7 1607.7	1602.9	1569.4	1602.9	1604.3	1609.8	
	1600.9	1563.2	1564.6	1565.3	1545.5	1550.3	asymmetric stretching vibration of -NO ₂
asymmetric stretching vibration of -NO ₂	1576.2 1555.0		1515.4				
	1382.6			1380.6	1382.6	1382.6	
	1334.8	1345.7	1345.7	1340.8	1353.2	1354.6	N-N stretching vibration + symmetric stretching vibration
symmetric stretching vibration of -NO ₂	1306.7 1273.2	1308.1	1182.4	1322.4	1320.4	1321.1	
	1258.8		1256.8	1272.5	1275.5	1274.6	
	1245.1	1243.8	1246.5	1252.7	1255.4	1254.0	
		1187.0	1185.6	1182.2	1189.7	1182.2	ring stretching vibration
asymmetric stretching vibration of C-H	1122.0			1124.6	1121.3	1121.3	
	1085.7		1075.5	1098.7	1091.9	1094.6	
N-N stretching vibration	1043.3 979.7			1049.5	1043.3	1045.4	
		950.3	944.2	939.4	938.7	933.2	ring stretching vibration
-NO ₂ deformation	855.9		880.5	874.4	875.7	873.0	
	832.6	834.0	832.7	835.4	834.7	837.5	-NO ₂ deformation
ring deformation	365.4		360.6	390.7	396.9	397.5	
	342.1	359.9	344.2	356.5	352.4	357.9	ring deformation
lattice vibration	319.5		312.1	310.7	318.2	318.9	
cage deformation	264.8		279.9	280.6	281.9	280.6	
	193.7		178.0	219.7	220.4	220.4	
-NO ₂ deformation	127.3	126.7	126.7	114.4	113.0	112.9	

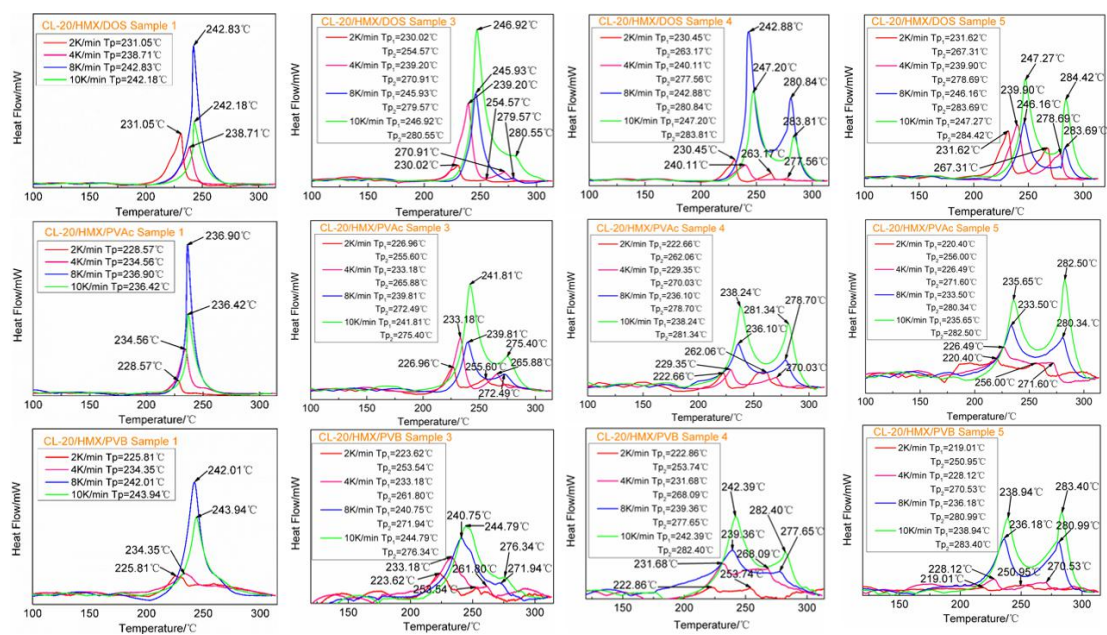


Fig. S1. DSC curves of CL-20/HMX/DOS composites, CL-20/HMX/PVAc composites, and CL-20/HMX/PVB composites