Supporting information

Thermal behaviour of mercury carboxylates as paintings' degradation products

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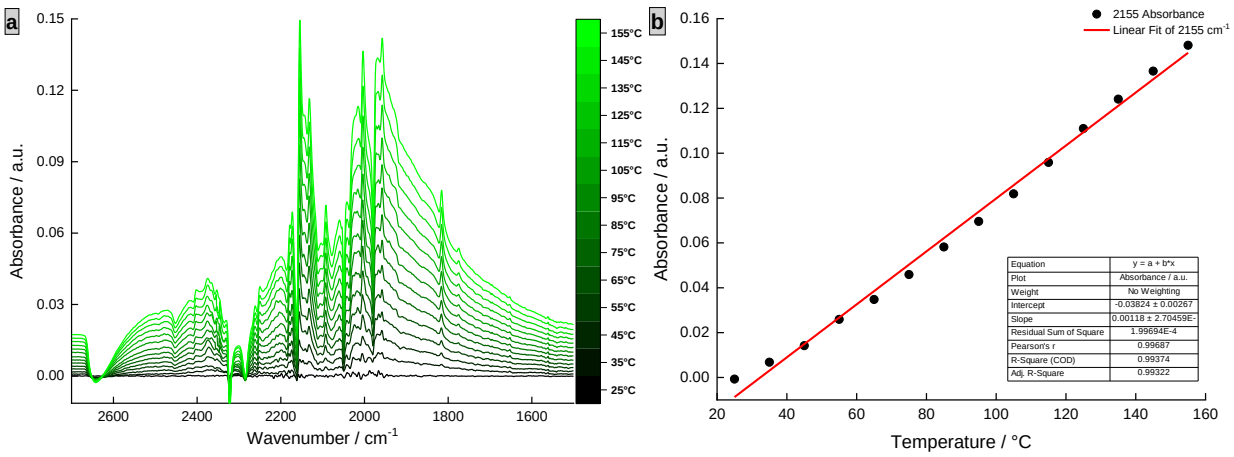

Fig. S1 In left part (a), a sequence of ATR-FTIR spectra was acquired in the absence of a sample, ranging from 25 to 155 °C, with a reference baseline set at 25 °C. These spectra reveal the temperature-related variations in the ATR diamond's phonon signal. In right part (b), a linear regression analysis was applied to the intensity at 2155 cm^{-1}, illustrating that the background signal exhibits an approximately linear correlation with temperature. This finding establishes the diamond's background signal as a reliable "thermometer" enabling the precise monitoring of sample temperature in temperature-dependent ATR-FTIR experiments

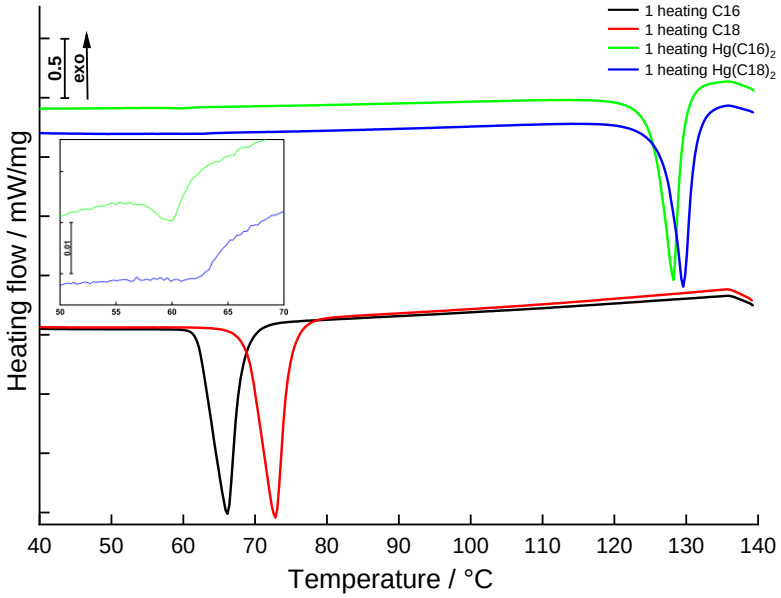

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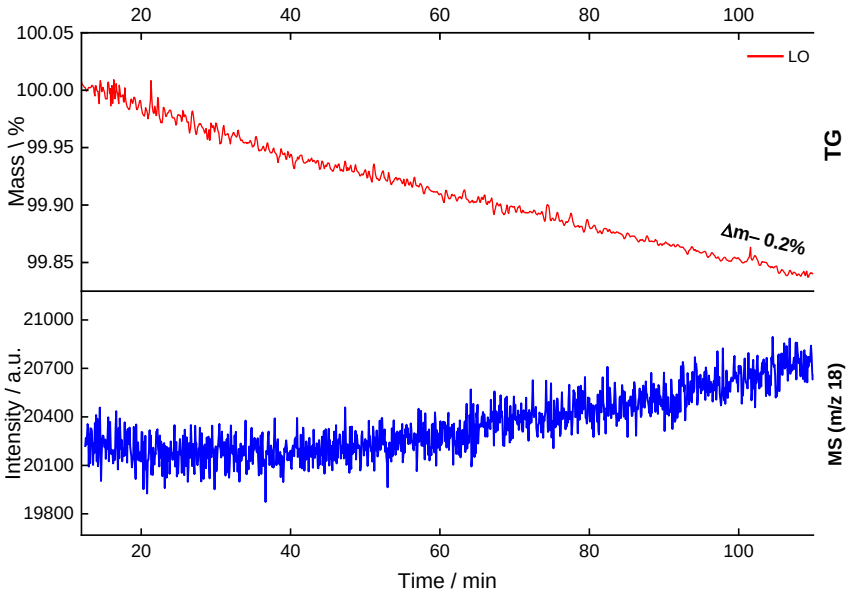
Table S1. The values of melting temperatures (T_m) and melting enthalpies (ΔH_m) of $Hg(C16)_2$, palmitic acid, $Hg(C18)_2$, stearic acid

Sample	*Phase transition*	*1 heating*	
		T_m / °C	ΔH_m / J/g
$Hg(C16)_2$	$S_a \rightarrow L_a$	58.2	0.35
	$S \rightarrow L$	124.9	182.0
Palmitic acid	$S \rightarrow L$	66.1	180.6
$Hg(C18)_2$	$S_a \rightarrow L_a$	59.4	0.38
	$S \rightarrow L$	126.2	177.7
Stearic acid	$S \rightarrow L$	72.9	201.7



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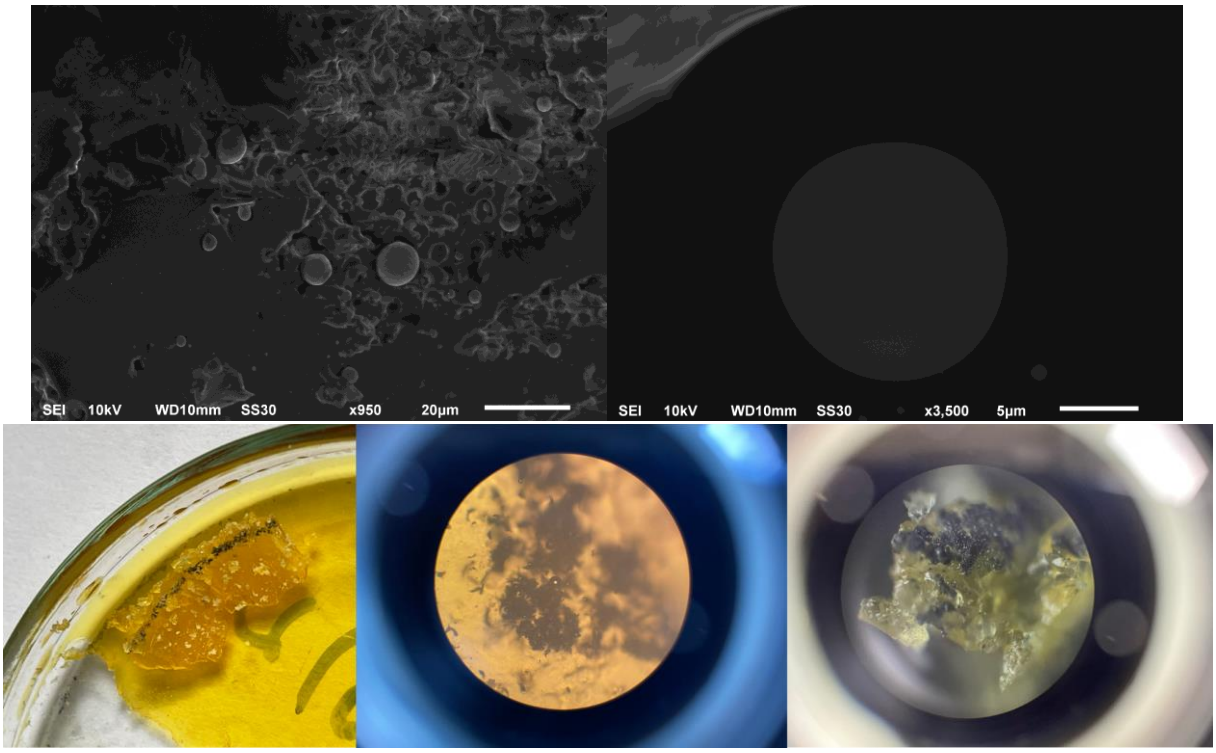
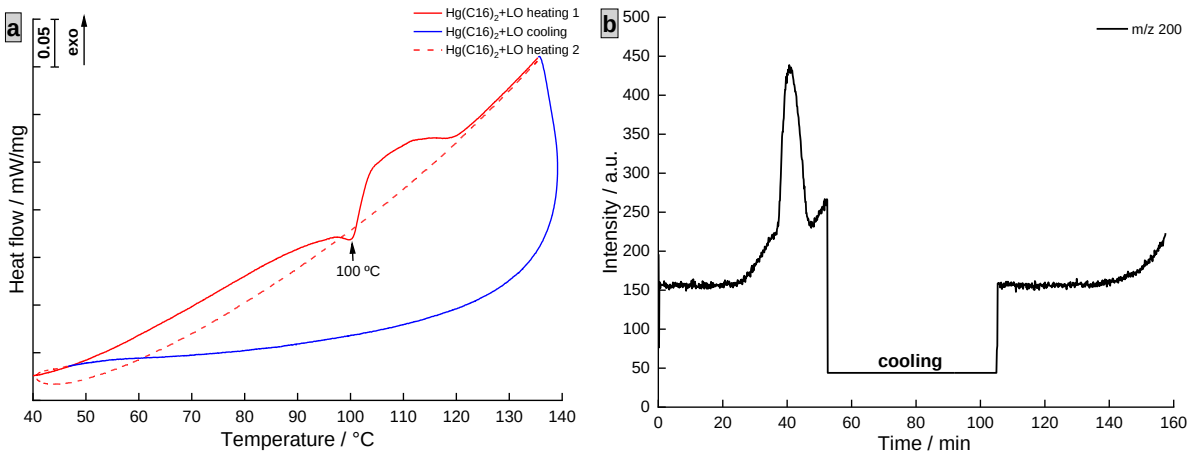


Element	App Conc.	Intensity Corrn.	Mass%	Atomic%
Hg M	24.24	1.0967	100.00	100.00
Totals			100.00	

Fig. S4 Scanning electron (including EDS) and optical microscope photos of $Hg(C18)_2$ mixed with LO after temperature treatment; The inserted table shows the results from EDS analysis of the globular grain



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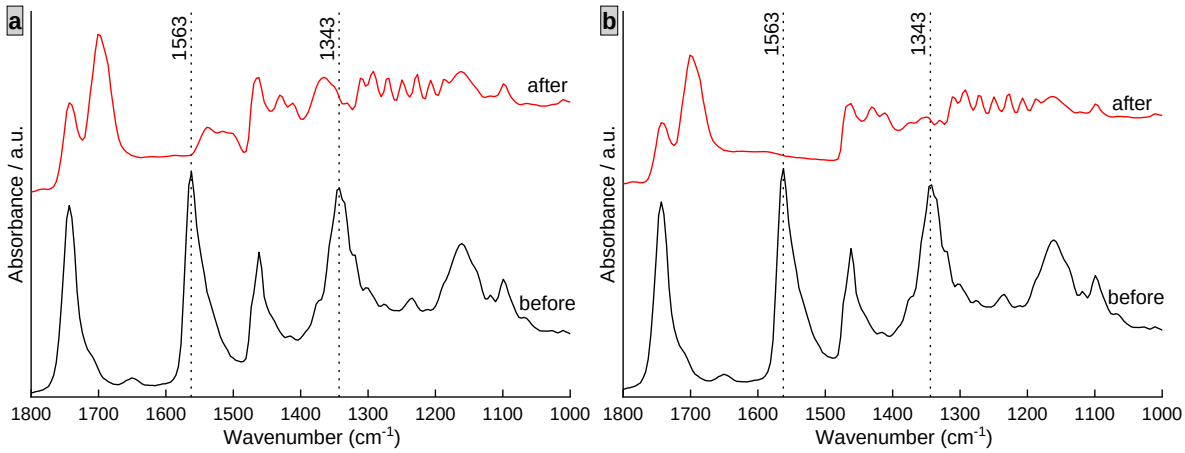

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