

Supporting materials for

Comprehensive properties study of low-temperature imidized polyimide with curing accelerators

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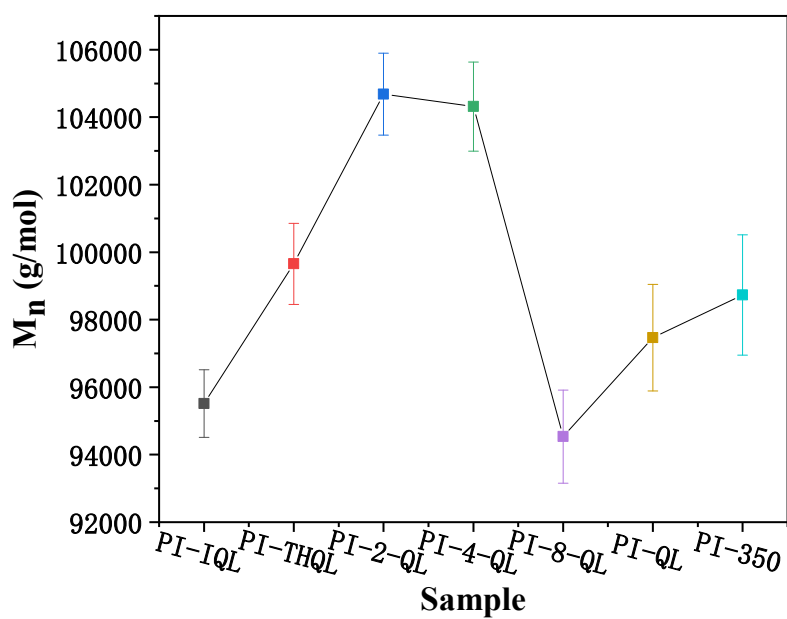


Figure S1. The number average molecular weight (M_n) of different low temperature curing accelerators.

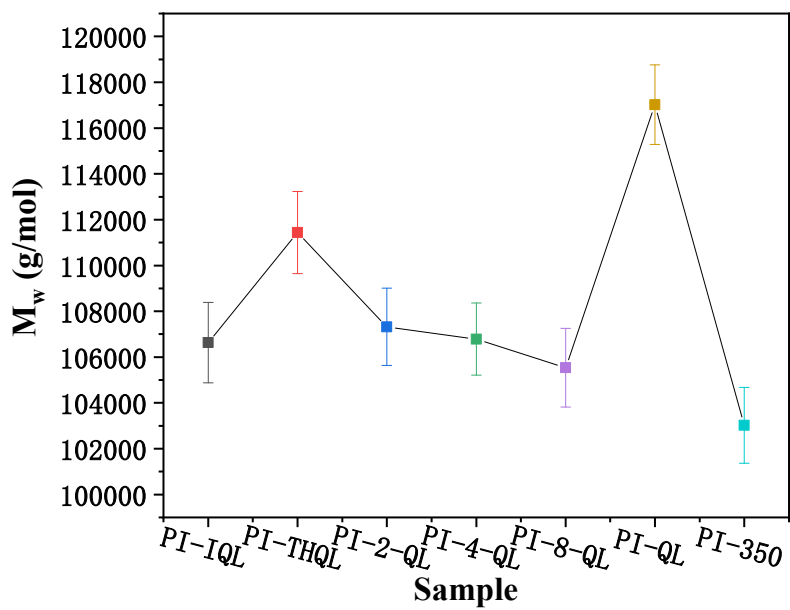


Figure S2. The weight average molecular weight (M_w) of different low temperature curing accelerators.

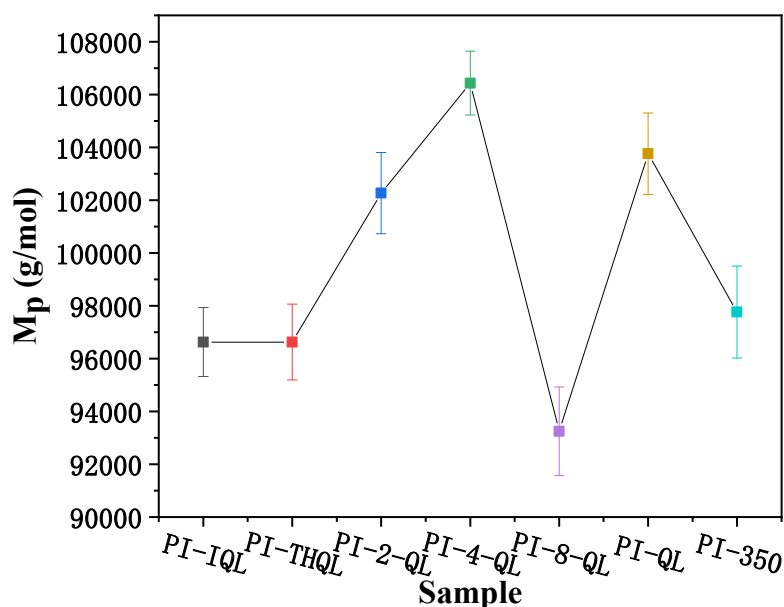


Figure S3. Peak molecular weight (M_p) of different low temperature curing accelerators.

Table S1. Average molecular weight and polydispersity index of PAA synthesized with different low temperature curing accelerators.

Sample	M_n (g/mol)	M_w (g/mol)	M_p (g/mol)	(M_w / M_n)
PI-IQL	95514	106629	96629	1.116373
PI-THQL	99653	111438	96629	1.118265
PI-2-QL	104685	107320	102268	1.025174
PI-4-QL	104315	106785	106434	1.023673
PI-8-QL	94536	105536	93243	1.116352
PI-QL	97463	117019	103762	1.510650
PI-350	98733	103019	97762	1.310650

The molecular weight will significantly affect the mechanical properties of the prepared polymer, so we use GPC test to determine the average molecular weight of the synthesized polyamide acid at different low temperature curing accelerators, as shown in Table S1. The number average molecular weight (M_n) of different low temperature curing accelerators were 95514 g/mol, 99653 g/mol, 104685 g/mol, 104315 g/mol, 94536 g/mol, 97463 g/mol and 98733 g/mol respectively. The weight average molecular weight (M_w) of different low temperature curing accelerators were 106629 g/mol, 111438 g/mol, 107320 g/mol, 106785 g/mol, 105536 g/mol, 117019 g/mol and 103019 g/mol respectively. The molecular weight of the highest concentration is called peak molecular weight (M_p), which is 96629 g/mol, 96629 g/mol, 102268 g/mol, 106434 g/mol, 93243 g/mol, 103762 g/mol and 97762 g/mol under different low temperature curing accelerators. The polydispersity index (M_w / M_n) of the polymer indicates the width of the molecular weight distribution. The polydispersity indexes of different low temperature curing accelerators are 1.116, 1.118, 1.025, 1.024, 1.116, 1.511 and 1.311, respectively, indicating that the polydispersity of the molecular weight has similar. The experimental data show that the molecular weight of polyimides

catalyzed by different low temperature curing agents has little difference.

Table S2. IR band allocation and assignments of the precursor and the according polyimide.

Wavenumber [cm ⁻¹]		Band assignment
Precursor	Polyimide	
-	1776	Imide I $\nu(\text{C}=\text{O})$
1660	-	Amide I $\nu(\text{C}=\text{O})$
1545	-	Amide II $\nu(\text{C}-\text{N}-\text{H})$
1500	1500	$\nu(\text{C}_6\text{H}_4)$ aromatic ring
-	1378	Imide II $\nu(\text{C}-\text{N}-\text{C})$, axial
1109		$\nu(\text{Si}-\text{O}-\text{Si})$ asymmetric
2950		$\nu(\text{C}-\text{H})$ aliphatic
Vibration modes: ν ... stretching		

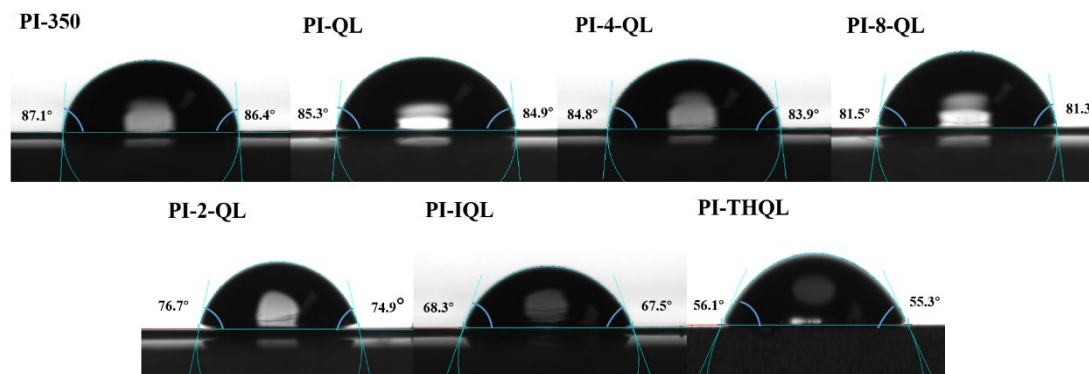


Figure S4. Contact angle of water and polyimide with different accelerators.