Electronic Supplementary Material (ESI) for Soft Matter.

Supplementary Information

Rheology of Oligomer Melts in the Nematic and Isotropic States

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Table S1. Mass of components used in oligomer synthesis

	Mass ratio DEGDA:C6M	Mass C6M (mg)	Mass DEGDA (mg)	Mass EDDT (mg)	Mass GDA (mg)	Mass BHT (mg)	Mass I369 (mg)	Mass DPA (mg)
$TMO_{0.72}$	0:1	348.13	0	117.92	16.45	5.00	7.50	5.00
$TMO_{0.67}$	0.05:1	322.40	16.12	126.35	17.63	5.00	7.50	5.00
$TMO_{0.64}$	0.075:1	310.91	23.32	130.12	18.15	5.00	7.50	5.00
$TMO_{0.62}$	0.1:1	300.22	30.02	133.62	18.64	5.00	7.50	5.00
$TMO_{0.6}$	0.125:1	290.23	36.28	136.90	19.10	5.00	7.50	5.00
$TMO_{0.52}$	0.25:1	248.84	62.21	150.46	20.99	5.00	7.50	5.00
$TMO_{0.4}$	0.5:1	193.62	96.81	168.56	23.52	5.00	7.50	5.00
TMO_{0}	1:0	0	218.12	232.02	32.37	5.00	7.50	5.00

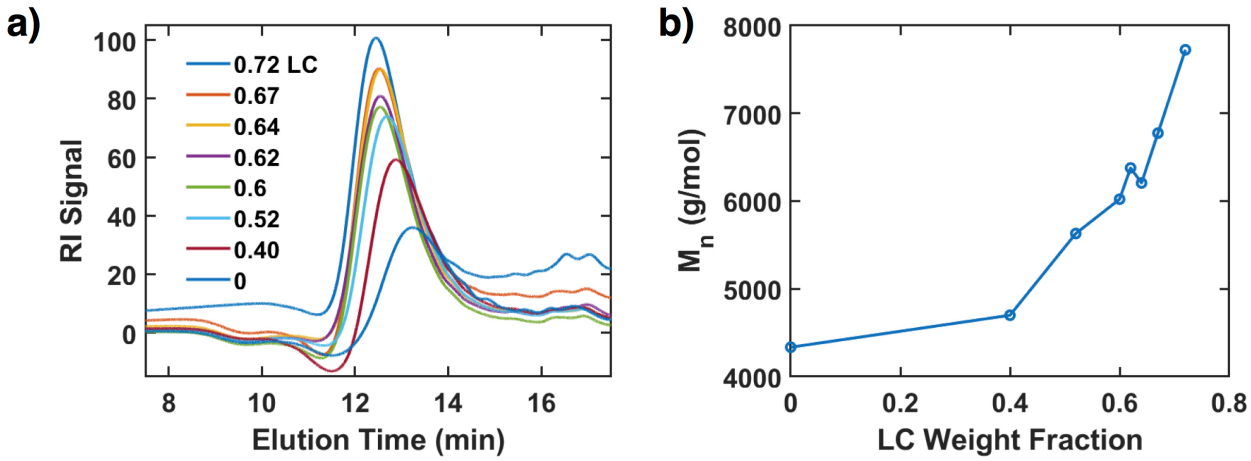

Figure S2. a) Results of gel permeation chromatography (GPC) on TMO_x series of oligomers. GPC was performed was performed on an Ecosec HLC-8320 GPC with chloroform as a solvent at a flow rate of 0.5 mL/min through a 15 cm TSKgel Super HM-N column. Samples were prepared in chloroform at a concentration of 1 mg/mL and were filtered through a 0.22 µm syringe filter prior to measurement. Refractive index detector data was used for analysis. b) Number average molecular weight of oligomers calculated using a polystyrene standard against liquid crystalline weight fraction.

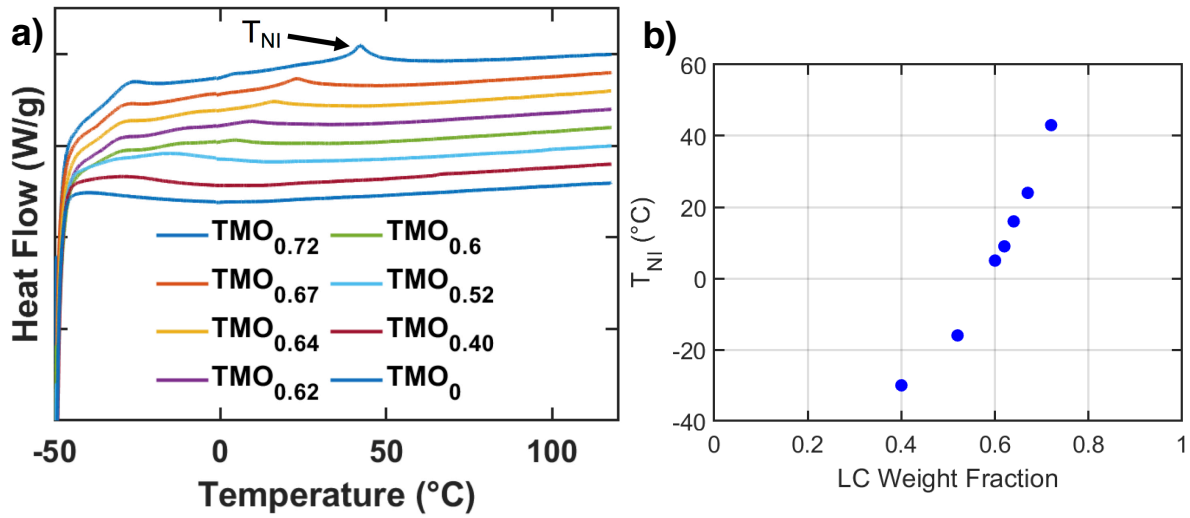

Figure S3. a) Differential Scanning Calorimetry (DSC) data of TMO_x oligomers. DSC was performed on a TA Instruments Discovery DSC 2500. Samples of approximately 5 mg were heated to 120°C, cooled to -50°C, then heated to 120°C. Heating rates of 10°C/min were used with a cooling rate of 5°C/min. Data is reported from the second heating cycle. The highest temperature endothermic peak corresponds to T_{NI}. b) T_{NI} of the TMO_x oligomers as a function of liquid crystalline weight fraction.

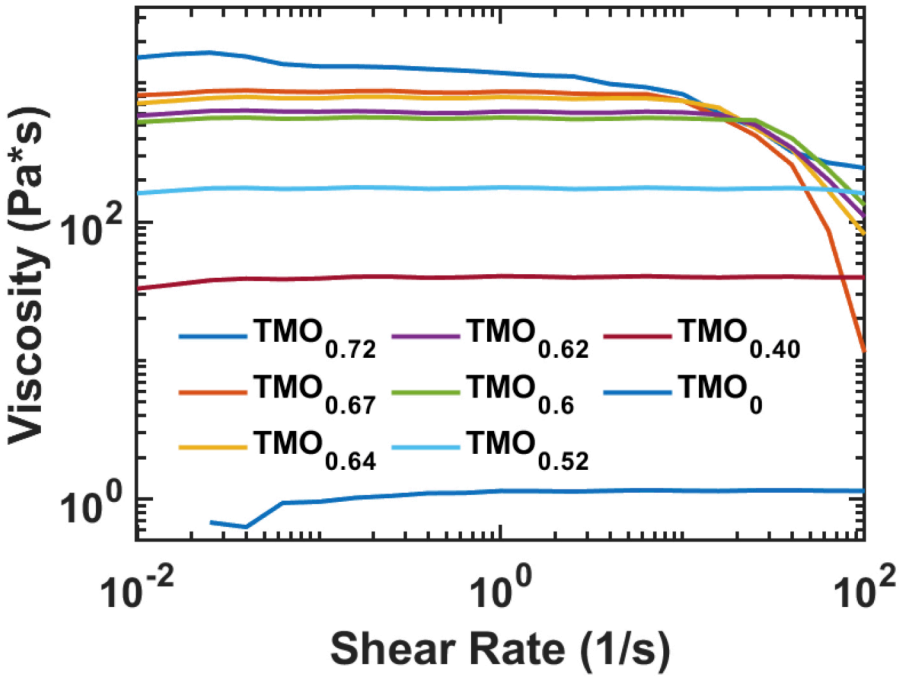

Figure S4. Flow sweeps of TMO_x series of oligomers.

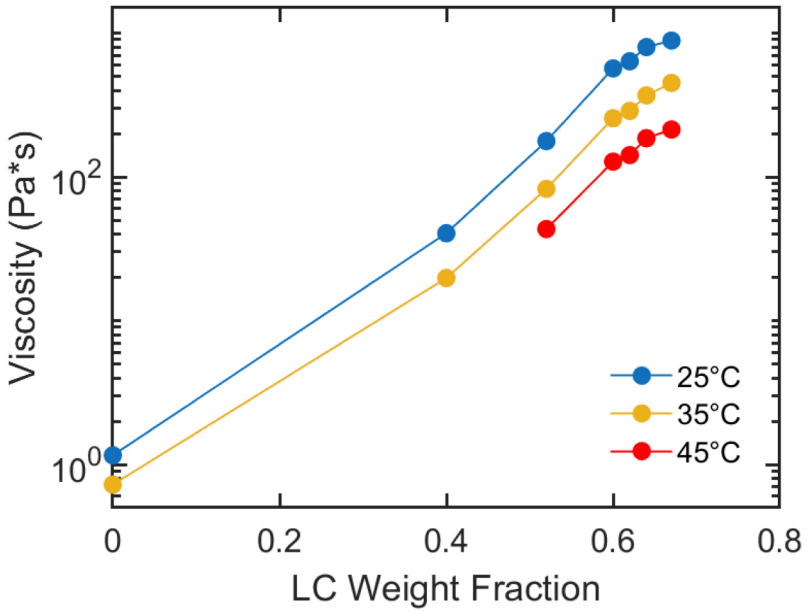

Figure S5. Rheology of TMO_x series of oligomers at three different temperatures as a function of the liquid crystalline weight fraction.