

Supporting Information

for Porous Polymer Oil Sorbents Based on PET Fibers with Crosslinked Copolymer Coatings

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Experimental Techniques

Electron Microscopy. Images of the polymer specimens were obtained with a JEOL JSM-5800 model electron microscope. Dried crosslinked polymers and treated NWPET fibers were cut to expose their inner structure and coated with a thin layer of Pd + Au alloy before SEM characterization. Environmental scanning electron microscope (ESEM) was also used to study the morphologies of the prepared crosslinked copolymers. Micrographs of the samples were detected using a FEI Quanta ESEM. A small fraction of the samples were cut or fractured in liquid nitrogen and mounted on standard SEM pin sub mount.

Dynamic Mechanical Analysis. Testing was carried out on samples with rectangular shape having the dimensions of 5x5x10 mm. Tests were conducted in the compression configuration on a Perkin Elmer model DMA 8000, from -30°C to 100°C at heating rate of 5°C/min with a 1 Hz sinusoidal frequency.

Differential Scanning Calorimetry. The samples were heated from 0°C to 100 °C in N₂ flow (20 cm/min) at a heating rate of 10°C/min. The instrument used was a Perkin Elmer TGA 7.

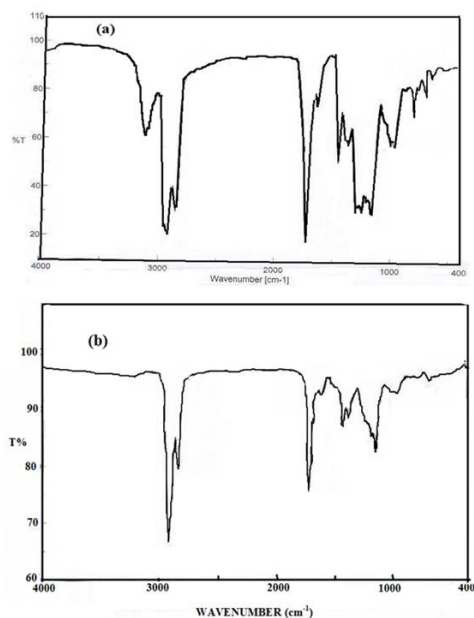


Figure S1. FTIR spectra of (a) DLM monomer and (b) crosslinked (with 1 wt. % DVB) ODA homopolymer.

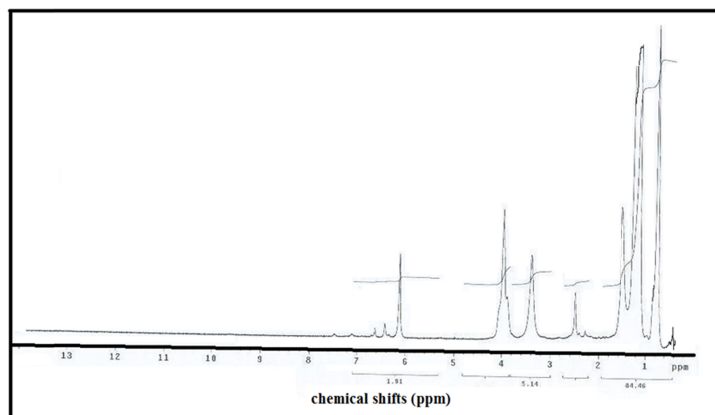


Figure S2. ^1H NMR spectrum of DOM monomer. Chemical shifts δ of the peaks: 0.765 ppm (t, 6H, CH_3), 1.166 ppm (m, 20H, CH_2), 1.506 ppm (m, 4H, CH_2), 3.972 ppm (t, 4H, CH_2), 6.129 ppm (d, 2H, CH).

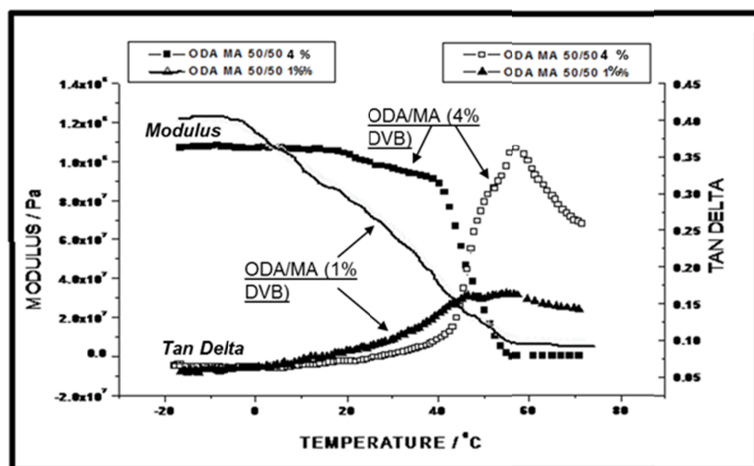


Figure S3. DMA data of crosslinked ODA/MA prepared by bulk polymerization. Percentages (1% and 4%) refer to concentration of the crosslinker DVB.

Table S1. DSC data of crosslinked homopolymers and copolymers as coatings on NWPET.

Polymers	DVB wt. %	$T_g / ^\circ\text{C}$		$T_m / ^\circ\text{C}$		$T_c / ^\circ\text{C}$	
		Cyclohexane	Bulk	Cyclohexane	Bulk	Cyclohexane	Bulk
ODA	1	31 ^a	34	45 ^a	52	34 ^a	28
	4	33 ^a	36	47 ^a	54	38 ^a	25
DOM	1	25	32	-	-	-	-
	4	23	28	-	-	-	-
DLM	1	35	38	45	46	34	23
	4	38	40	47	50	35	33
ODA/MA	1	-	-	34	37	19	16
	4	-	29	38	44	22	15
ODA/DOM	1	-	-	45	47	22	23
	4	-	-	48	49	25	27
ODA/DLM	1	38	32	39	42	20	22
	4	31	34	41	44	23	25

a) Polymerization completed in isopropanol rather than cyclohexane solvent.