Structured Hydrophilic Domains on Silicone Elastomers

Vinodh Rajendra,[a] Yang Chen,[a] and Michael A. Brook*[a]

SUPPORTING INFORMATION

Table 1S: Phase Separated Liquid on 5% TEOS Elastomer (Table 2, entry 6)

	TMB		**PDMS**	**Aminopropyl-terminated PDMS***			**PEG**
	$-OCH_3$	=CH	$OSi(CH_3)_2O-$	$SiCH_2CH_2CH_2$	$SiCH_2CH_2CH_2$	$SiCH_2CH_2CH_2$	CH_2CH_2O
δ, ppm	3.78	6.10	0.08	0.49-0.58	1.43-1.55	2.64-2.71	3.66
Integration	9.00	3.00	5.03		0.26		1.55
J-coupling	-		-	-	-	7.00	-
Multiplicity	s	s	s	m	m	t	s

* Si = polydimethylsiloxanes

Table 2S: Atomic % of Nitrogen at 30° for Elastomers With PEG (Table 2, entries 7-10)

%TEOS	**Surface At. %**	**Bottom At. %**
10	1.283	0.846
15	0.433	0.238
20	0.594	0.442
25	0.257	0.006

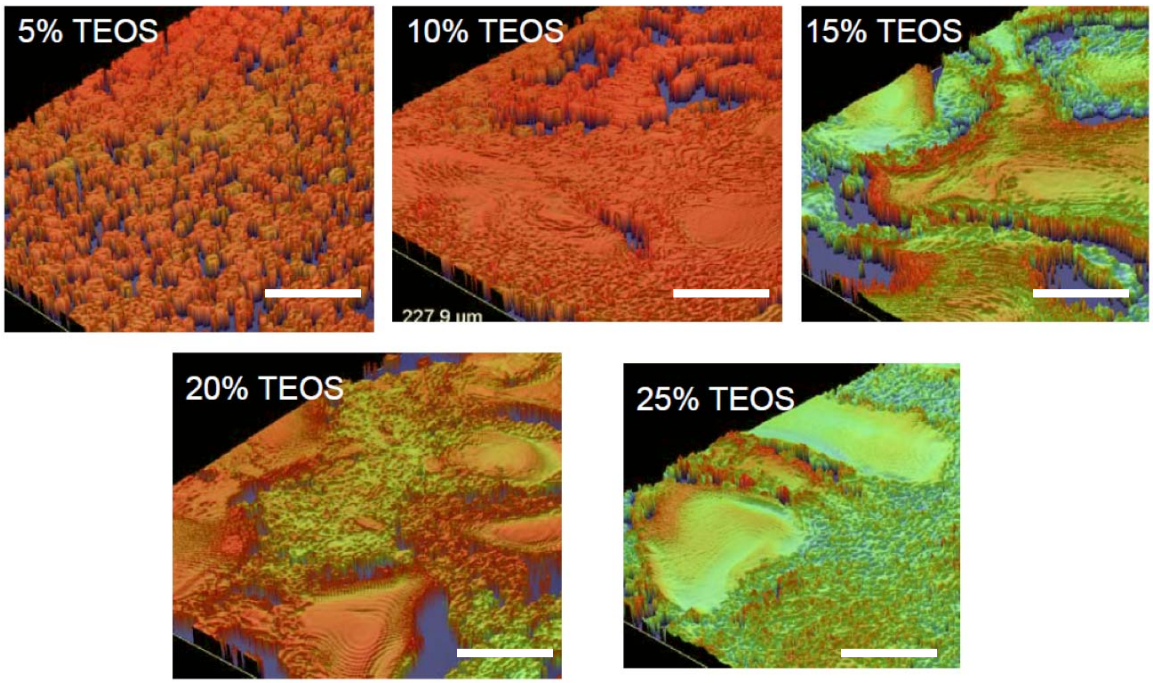

Figure 1S: Surface profilometry showing increasing roughness with increasing TEOS concentration (Table 2, entries 6-10)

Experimental for Optical Microscopy Amplitude Measurements of Wave Structures:

For the determination of the amplitude of the wave structures found on certain elastomer surfaces, optical microscopy was used by first determining the number of fine tuning units it took to focus on the top and bottom faces of a glass slide of known thickness. Thus the distance travelled in each fine tuning unit was determined to be 1.5μm/unit and applied.

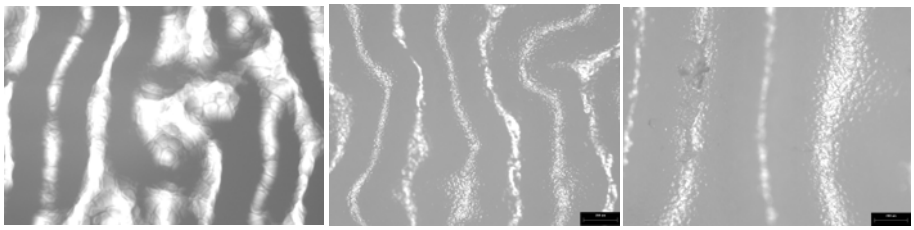

Figure 2S: Selected surface images showing wave structures using 5%, 10% and 15% TEOS at 90% RH (Table 2, entries 19-21). Scale bar = 200 μm.

Table 3S: Amplitudes of Wave Structures on Elastomer Surfaces

Elastomer (Table 2 entries)	**R_Z (µm)**
15%T No PEG, 90% RH Entry 16	173.07
20%T, No PEG, 90% RH Entry 17	147.97
5%T, 90% RH Entry 19	39.71
10%T, 90% RH Entry 20	110.64
15%T, 90% RH Entry 21	165.65
20%T, 90% RH Entry 22	310.15
25%T, 90% RH Entry 23	254.48

R_Z is the average maximum height of the profile as it takes the average of the 10 highest and 10 lowest data points. The R_Z factor is calculated using the following formula:

$$R_Z = {}^{1}/_{10}\left[\sum_{j=1}^{10} H_j - \sum_{j=1}^{10} L_j\right]$$

where H_j and L_j are the highest and lowest datapoints respectively.

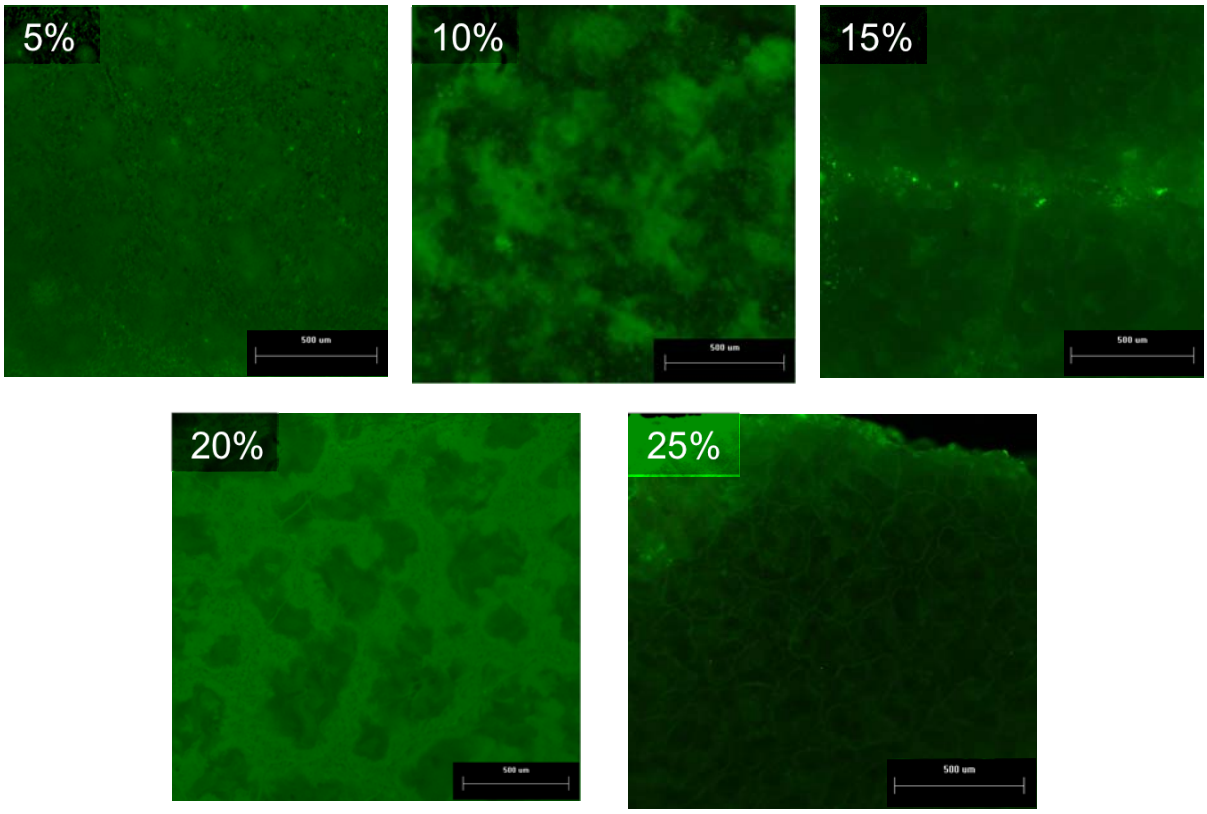

Figure 3S: Fluorescence images of the upper layers of elastomers showing structure as a function of TEOS concentration (Table 2, entries 6-10)

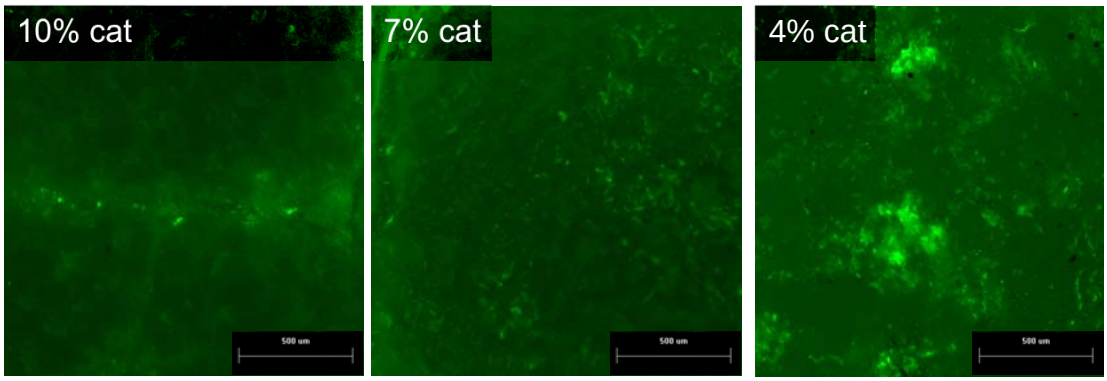

Figure 4S: Fluorescence images showing internal structuring with varying catalyst (Table 2, entries 11-13)