Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

for RCS Advances, See DOI: 10.1039/b000000x/

Goethite Nanorods as Cheap and Effective Filler for Siloxane Nanocomposite Elastomers

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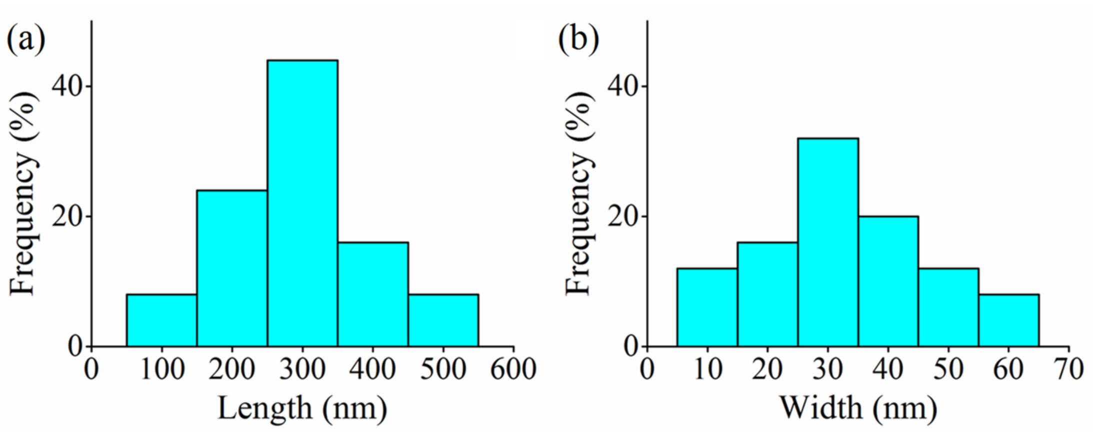


Figure S1. Histograms of length (a) and diameter (b) of the NPs according to the TEM image

Table S1. Crosslinking data for prepared silicone films incorporating different percentages of goethite (according to Table 1)

Sample	Weight loss (L_w)[a]	Crosslinking yield (C_w)[b]
VHM 1	0.034	0.966
VHM 2	0.030	0.970
VHM 3	0.030	0.970
VHM 4	0.030	0.970
VHM 5	0.029	0.971
VHM 6	0.026	0.974
VHM 7	0.077	0.923
VHM3 non-crosslinked	0.077	0.923
VHM7 non-crosslinked	0.055	0.945

[a]Weight losses, $L_w = (W_d - W_e)/W_d$, where $(W_d - W_e)$ is the weight of the extracted, soluble fraction; [b]Crosslinking yield, $C_y = W_e/W_d$, where W_d is the weight of the dried sample before swelling and extraction, W_e is the weight of the dried sample after extraction.

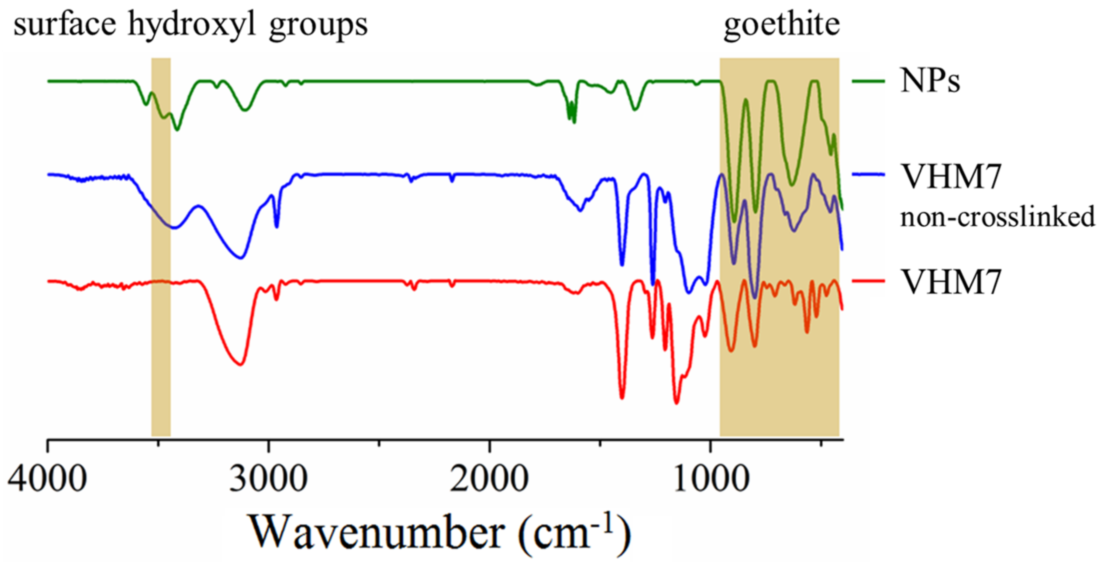
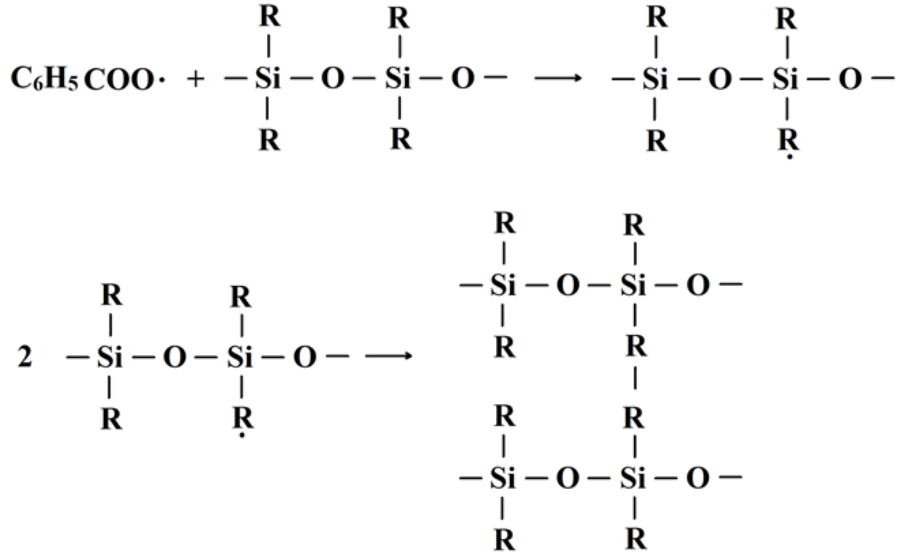


Figure S2. Comparative IR spectra of goethite NPs, non-crosslinked VHM7 composite and crosslinked VHM7 film.

$$2C_6H_5-COO-OOC-C_6H_5 \longrightarrow 2C_6H_5COO\cdot \qquad (1)$$



(2)

(3)

$$C_6H_5COO\text{-}OOCC_6H_5 + RH \rightarrow C_6H_5COOR + C_6H_6 + CO_2 \qquad (4)$$

$$C_6H_5COO\text{-}OOCC_6H_5 + RH \rightarrow C_6H_5COOH + C_6H_5R + CO_2 \qquad (5)$$

Scheme S1. Reactions leading to the crosslinking of PDMS, (1) - (3); possible chemical interractions of the peroxide with the components of the composites (RH could be NPs with OH groups on surface or PDMS having OH groups on the ends of the chain), (4) and (5), according to ref.[19] [O. J. Walker and G. L. E. Wild**.,** The thermal and photochemical decomposition of acetyl peroxide, J. Chem. Soc., 1937, 1132-1136].

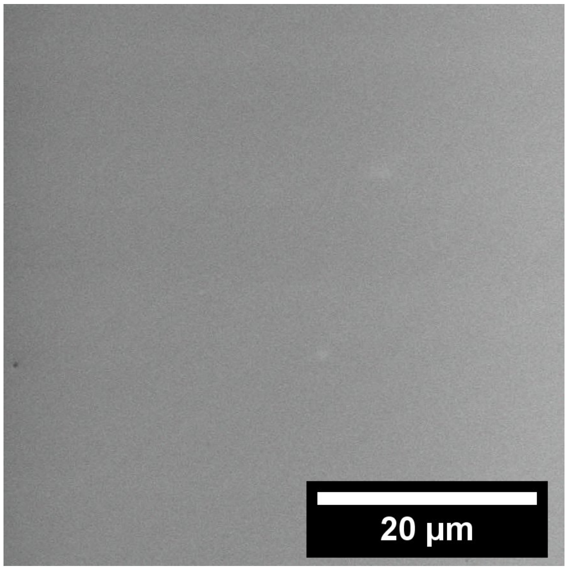


Figura S3. SEM image of VHM1.

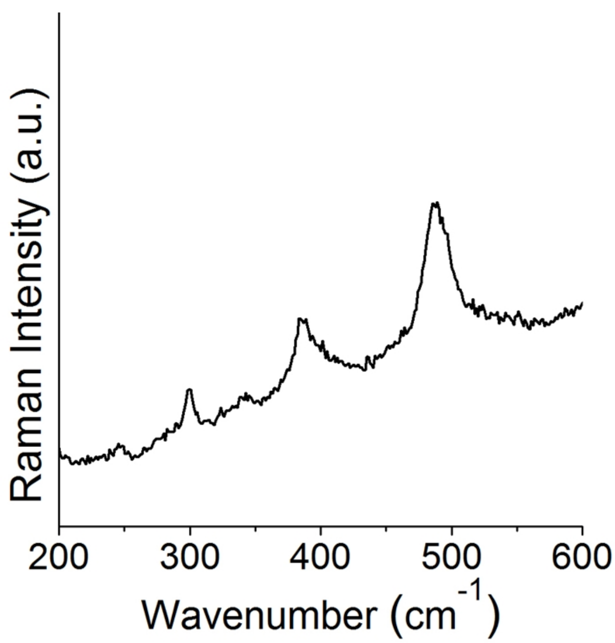


Figura S4. Raman spectrum of VHM7.