SUPPORTING INFORMATION

Novel non-aqueous sol-gel route for the *in situ* synthesis of high loaded silica-rubber nanocomposites

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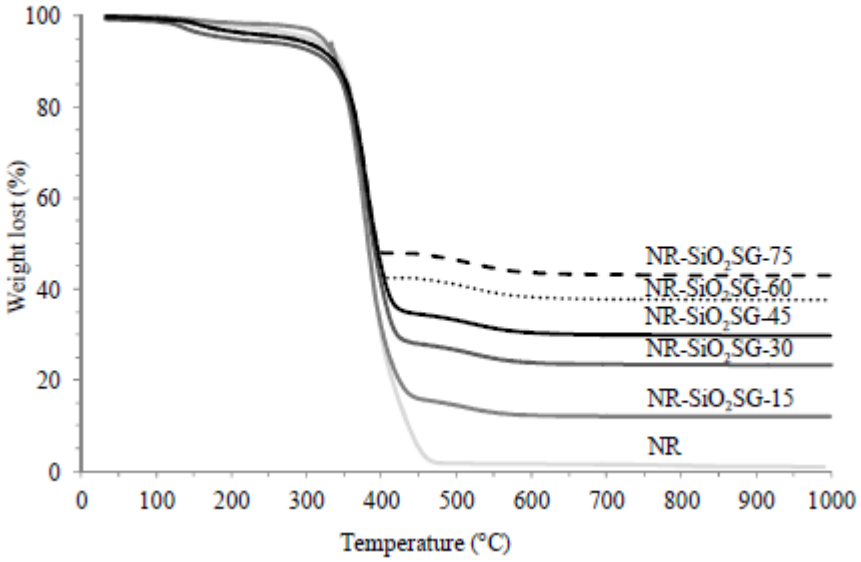

Figure S1: Comparison of TGA profiles of natural rubber (NR) and NR-SiO_2SG-X nanocomposites

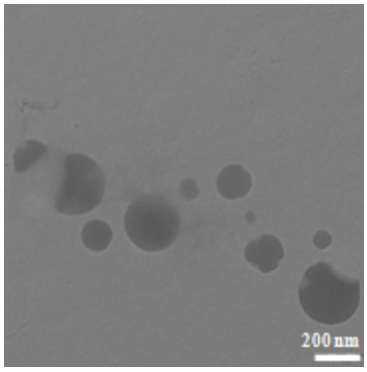

Fig. S2: TEM image of SiO_2SG powder

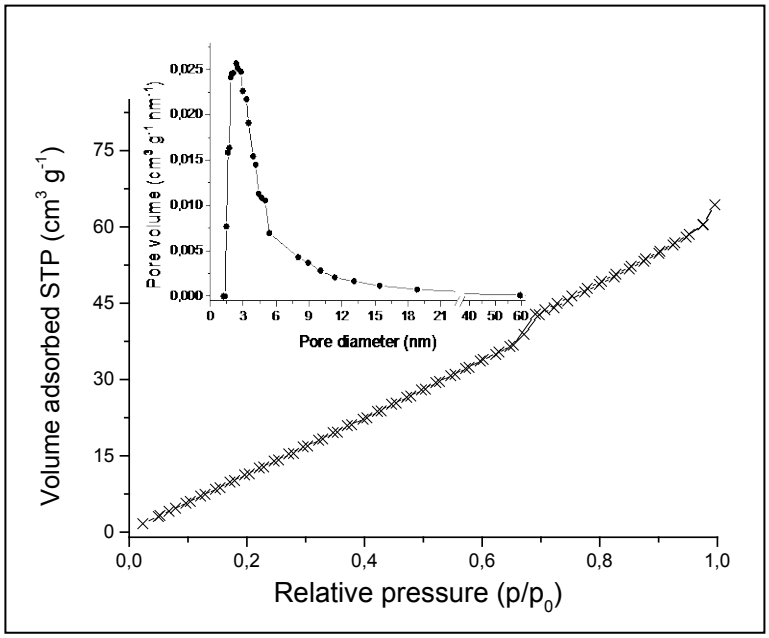

Figura S3: Nitrogen adsorption-desorption isotherm for SiO_2SG silica powder. In the inset the pore distribution.

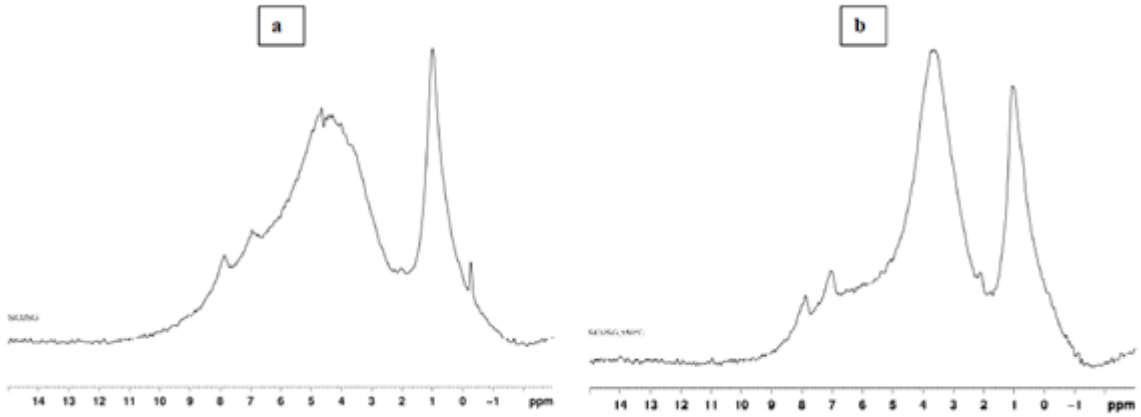

Figura S4: ^{1}H CP MAS NMR spectra of samples a) SiO_2SG and b) SiO_2SG dried at 150°C

Table S1: Assignments and chemical shifts of ^{1}H NMR

δ (ppm)	Functional group	
7.9	H-COO	Formic acid/ Ethyl formate
7.0	C-H aromatic	toluene
4.5 broad	O-H /CH_2	water/ Ethyl formate
3.6 broad	O-CH_2	EtOH, ethoxyde
2.1	CH_3	toluene
1.0	CH_3	EtOH, ethoxyde

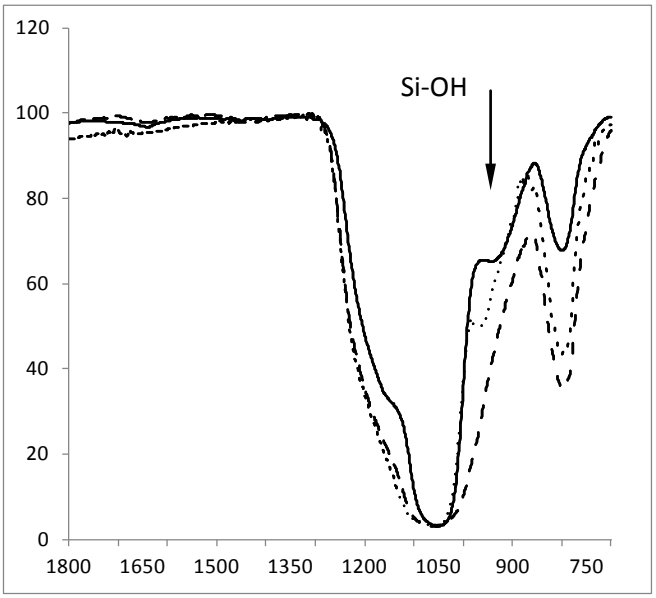

Figura S5: ATR-FTIR spectrum of SiO_2SG (bold line), SiO_2AQ (dotted line) and SiO_2R (dashed line), dried at 150°C in air.The intensity of the spectra is normalized referring to the intensity of the stretching mode Si-O-Si at ~ 1100 cm^{-1} [51]

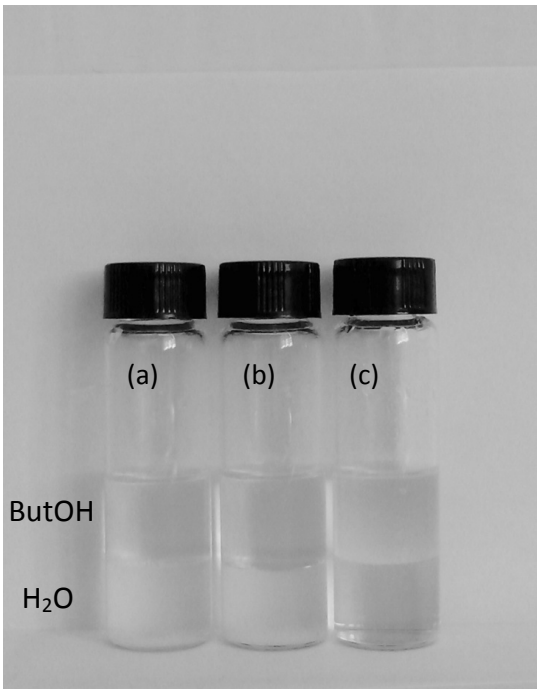

Figura S6: Mixing test of (a) SiO_2-R ; (b) SiO_2-AQ and (c) SiO_2SG in water/buthanol immiscible phases. SiO_2-SG is dispersed in buthanol while SiO_2-R and SiO_2-AQ in water.

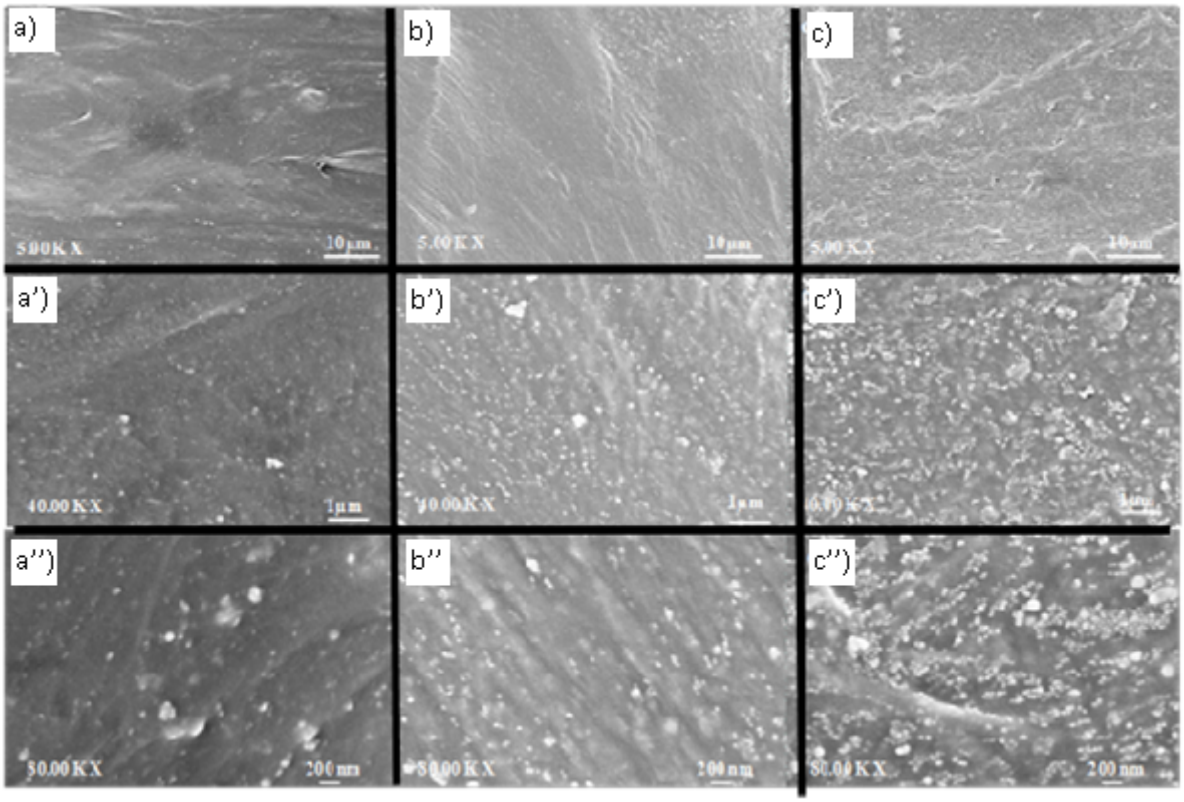

Figura S7: FE-SEM micrographs of in-situ composites at different silica content: a) NR-SiO_2SG-15; b) NR-SiO_2SG-30; c) NR-SiO_2SG-45. The superscript ‘ and ‘’ stands for the high magnification.

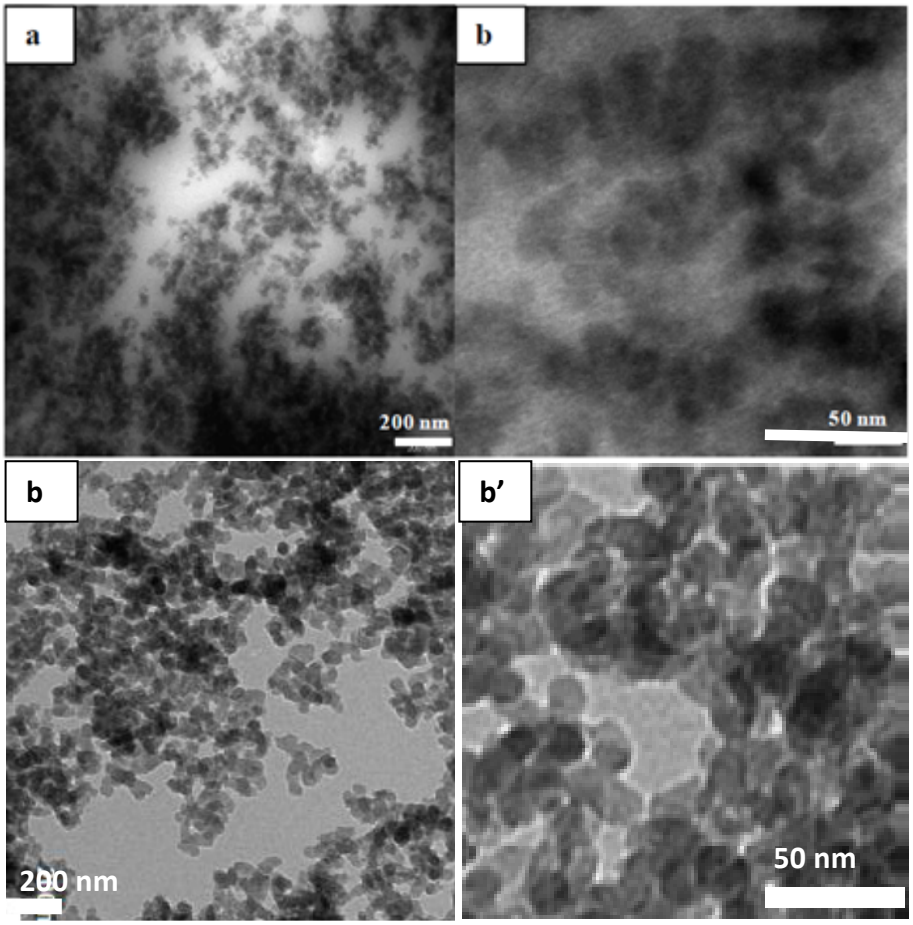

Figura S8 TEM image of a) NR-SiO_2R-30 and b) NR-SiO_2AQ-30 composites. The superscript ' stands for higher magnification.