

ESBR Nanocomposites Filled with Monodisperse Silica Modified with Si747: The Effects of Amount and pH on Performance

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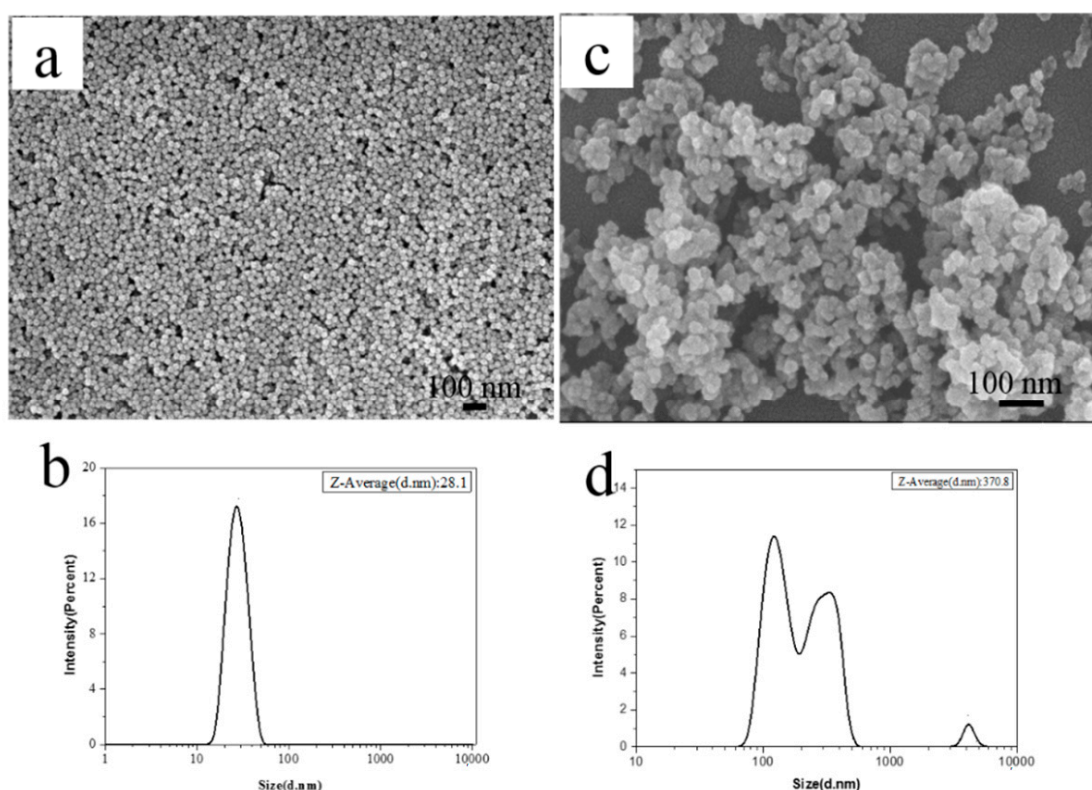


Figure S1. SEM images and corresponding DLS results of silica particles; (a) AS; (b) the corresponding DLS results of AS with single peak and average size of 28 nm; (c) PS; and (d) the corresponding DLS results of PS with multiple peaks and average size of 370 nm.

Table S1. The shear storage modulus difference $\Delta G'$ of ESBR compounds filled with monodisperse silica before and after modification

Sample	Pure AS-R	8%-AS-R	10%-AS-R	12%-AS-R	15%-AS-R	20%-AS-R
$\Delta G'/\text{KPa}$	770.56	381.17	322.9	295.38	279.43	294.27

Table S2. The shear storage modulus difference $\Delta G'$ of ESBR compounds filled with precipitated silica before and after modification

Sample	Pure PS-R	10%-PS-R	12%-PS-R	15%-PS-R	20%-PS-R
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$\Delta G'/\text{KPa}$	911.29	508.84	446.46	445.61	435.28
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Table S3. The shear storage modulus difference $\Delta G'$ of ESBR compounds filled with silica modified at different pH

Sample	15%-AS @3-R	15%-AS @7-R	15%-AS @9-R	15%-AS @12-R	20%-PS @7-R	20%-PS @9-R
$\Delta G'/\text{KPa}$	445.1	334.81	279.43	347.49	458.95	435.28

Table S4. $\text{Tan}\delta$ at 0 °C and 60 °C of ESBR vulcanizates filled with monodisperse silica modified by different dosage of Si747

Sample	8%-AS-R	10%-AS-R	12%-AS-R	15%-AS-R	20%-AS-R
$\text{Tan}\delta@0\text{ °C}$	0.2455	0.2460	0.2391	0.2662	0.2524
$\text{Tan}\delta@60\text{ °C}$	0.1144	0.1137	0.1105	0.1095	0.1181

Table S5. $\text{Tan}\delta$ at 0 °C and 60 °C of ESBR vulcanizates filled with precipitated silica modified by different dosage of Si747

Sample	10%-PS-R	12%-PS-R	15%-PS-R	20%-PS-R
$\text{Tan}\delta@0\text{ °C}$	0.2272	0.2370	0.2424	0.2553
$\text{Tan}\delta@60\text{ °C}$	0.1313	0.1323	0.1287	0.1272

Table S6. The shear storage modulus difference $\Delta G'$ of ESBR compounds filled with silica modified at different pH

Sample	15%-AS @3-R	15%-AS @7-R	15%-AS @9-R	15%-AS @12-R	20%-PS @7-R	20%-PS @9-R
$\text{Tan}\delta@0\text{ °C}$	0.2270	0.2426	0.2533	0.2510	0.2238	0.2423
$\text{Tan}\delta@60\text{ °C}$	0.1405	0.1214	0.1095	0.1112	0.1429	0.1287

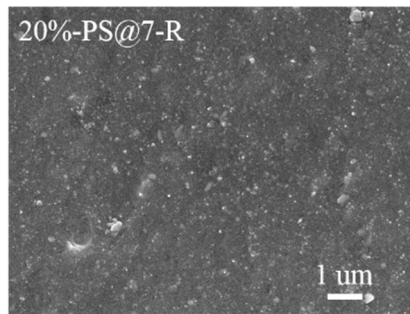


Figure S2. Fracture surface SEM micrographs of ESBR/PS vulcanizates with PS modified at different pH