Journal of Composites Science

MDPI

Supplementary Materials:

Fabrication of Nanostructured Kaolinite Doped Composite Films from Silicone Rubber with Enhanced Properties

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S1. FTIR Analysis of SR and Kaolinite

The starting SR displayed the intense signal at 790 cm^{-1} corresponding to the coupling of stretching vibration of Si-C and rocking vibration of $–CH_3$. The doublet identified at 1015 cm^{-1} and 1074 cm^{-1} is the characteristic marker of stretching vibration of Si-O-Si backbone of SR. The rocking and bending vibrations of $Si-CH_3$ were clearly detected at 866 cm^{-1} and 1259 cm^{-1}. The absorption band obtained at 1408 cm^{-1} has been ascribed to the rocking vibration of $–CH_2$. The peak found at 2964 cm^{-1} has been attributed to the stretching vibration of CH_3 [1]. Kaolinite exhibited characteristic signature at 3688 cm^{-1} which is assigned to the stretching vibration of inner-surface hydroxyls positioned above the aluminium layer. The peak at 3620 cm^{-1} is assigned to the stretching vibration of inner -OH (hydroxyls) located below the aluminium atoms which extend towards the vacant octahedral hole (intralayer cavity) of kaolinite [2]. The absorption band recorded at 1115 cm^{-1} indicates Si-O symmetric stretching whereas the sharp peak at 1004 cm^{-1} is the characteristic marker of in-plane Si-O-Si anti-symmetric stretching. The signal at 911 cm^{-1} corresponds to the bending vibration of inner hydroxyls (Al-OH). Finally, the Si-O-Si inter tetrahedral bridging bond in SiO_2 has been detected at 788 cm^{-1} [3,4].

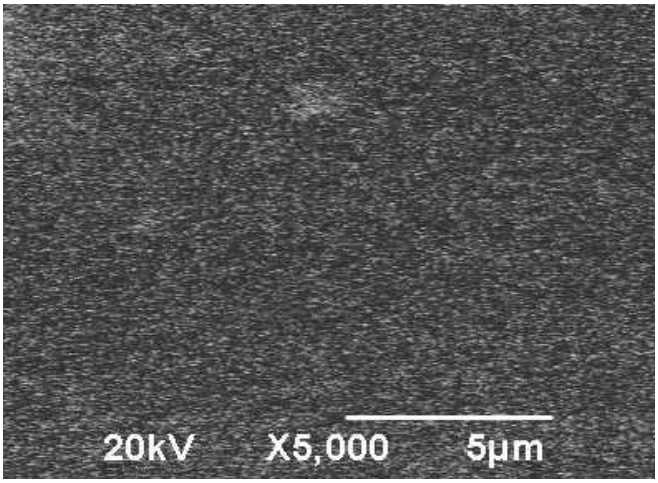

Figure S1. SEM microphotograph of SR at X5000.

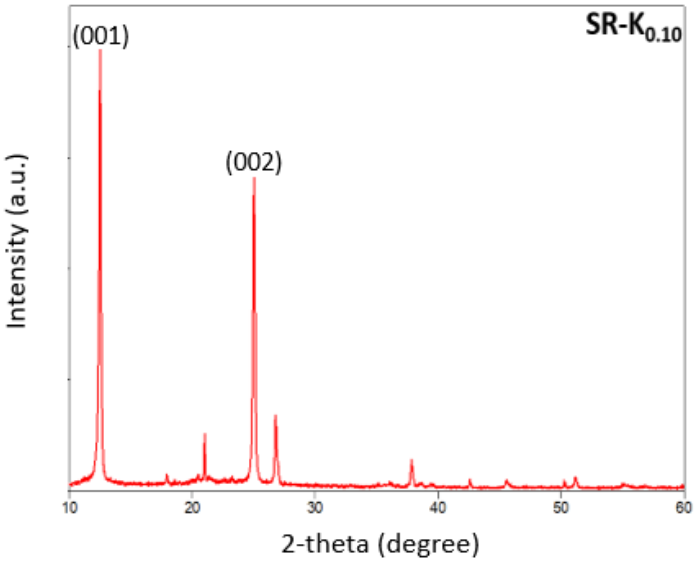

Figure S2. XRD pattern of SR-$K_{0.10}$.

Table S1. Calculated standard deviations of the observed data for investigated mechanical properties.

Film Code	Tensile Strength (MPa)	Young's Modulus (MPa)	Elongation at Break (%)
SR	0.077	0.021	19.816
SR-$K_{0.01}$	0.111	0.015	21.897
SR-$K_{0.03}$	0.120	0.019	22.581
SR-$K_{0.05}$	0.114	0.026	18.434
SR-$K_{0.07}$	0.145	0.021	22.309
SR-$K_{0.10}$	0.167	0.021	18.601

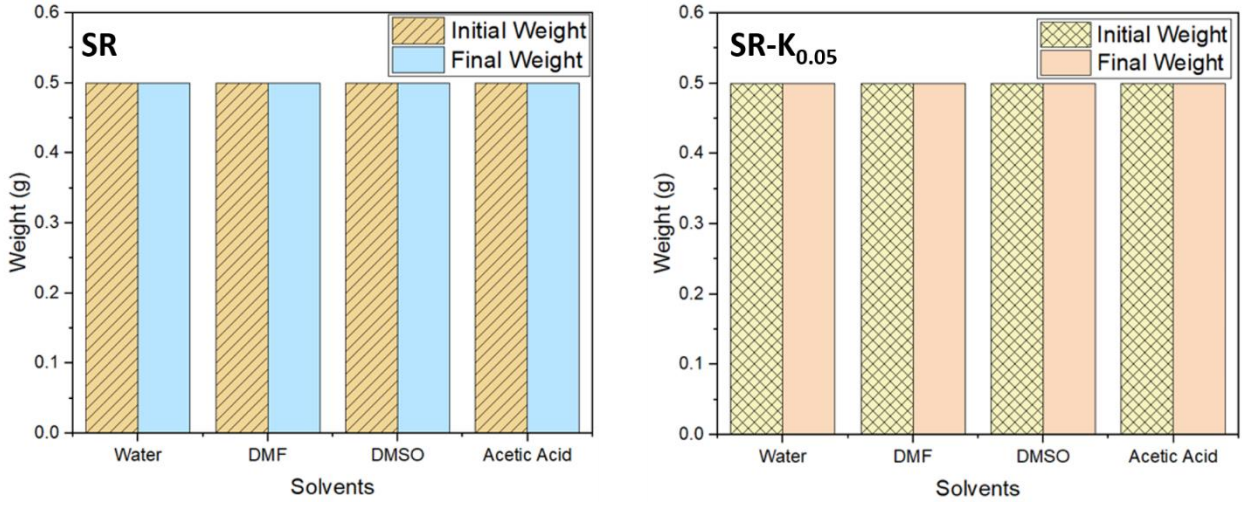

Figure S3. Effect of solvents on weight loss of SR and SR-$K_{0.05}$.

References

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