Electronic Supplementary Material (ESI) for RSC Advances.

Superhydrophobic Nanocomposites from Biodegradable Thermoplastic Starch Composites (Mater-Bi®), Hydrophobic Nano-Silica and Lycopodium Spores

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Video File: Mater Bi/HMFS (40/60) coating on aluminum foil. Preservation of superhydrophobic state after the foil is turned into a wrinkled ball and reused.

Table 1 Physico-chemical characteristics of the hydrophilic and hydrophobically modified fumed silica.

Property	***Unit***	***Hydrophilic silica***	***Hydrophobic silica***
Specific Surface Area (BET)	m^2/g	270-330	230-290
Ignition Loss (2 hrs. at 1000°C)	-	2.0	2.5
pH value in 4% aqueous solution	%	3.7-5.5	5.5-8.0
Residual carbon content	%	2.5	2.5
Tampered density (ISO 787-11)	g/L	50.0	60.0
SiO_2 content	%	99.8	99.8

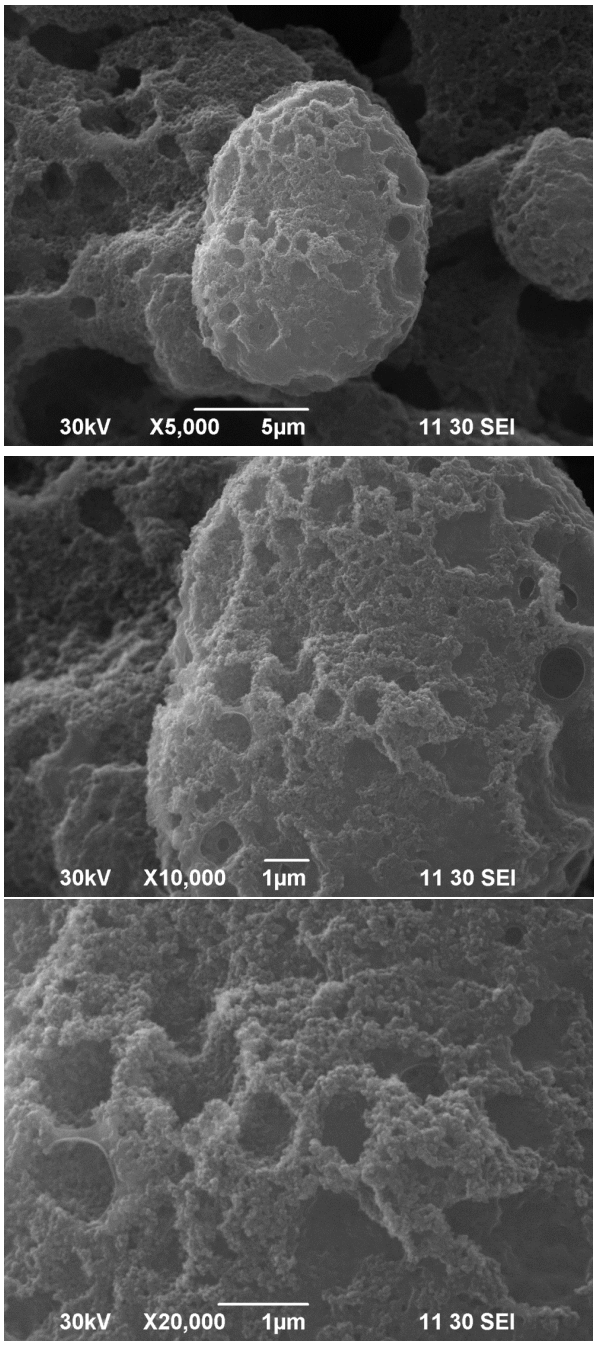

Fig. 1: high magnification SEM images of the hydrophobic silica nanoparticles spray deposited on a metal surface. Details show highly porous nano-scale texture along with the micron scale roughness.

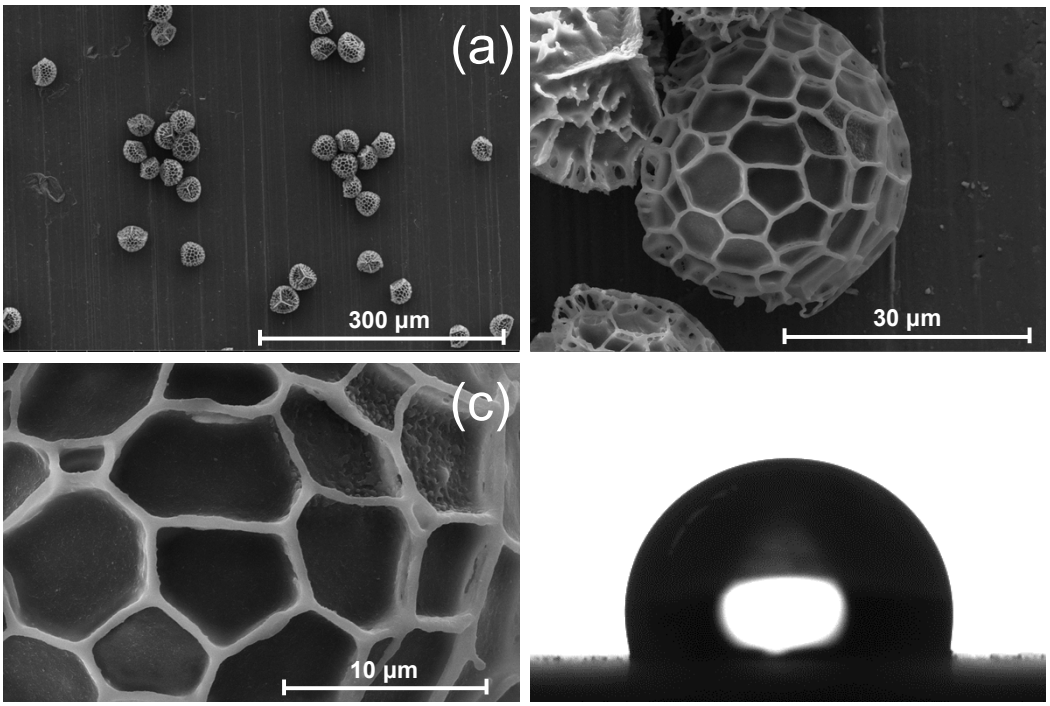

Fig. 2. (a) Low and (b.c) high magnification SEM images of the lycopodium spores. Even a few particles on a surface can increase its hydrophobicity.