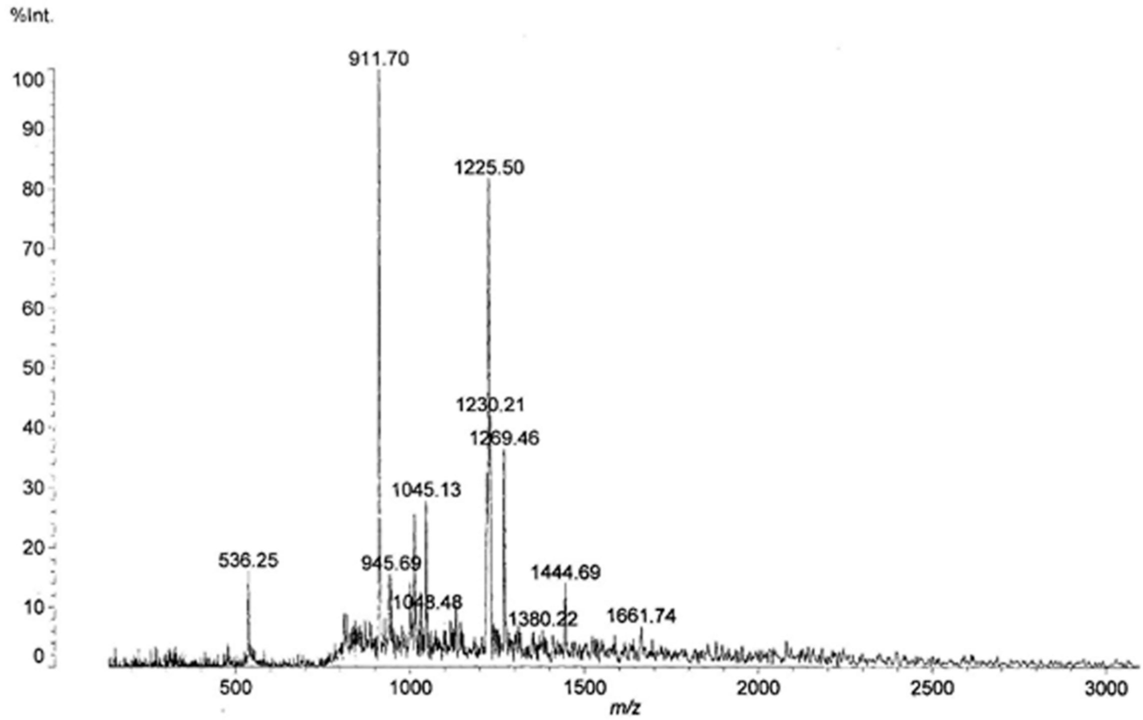
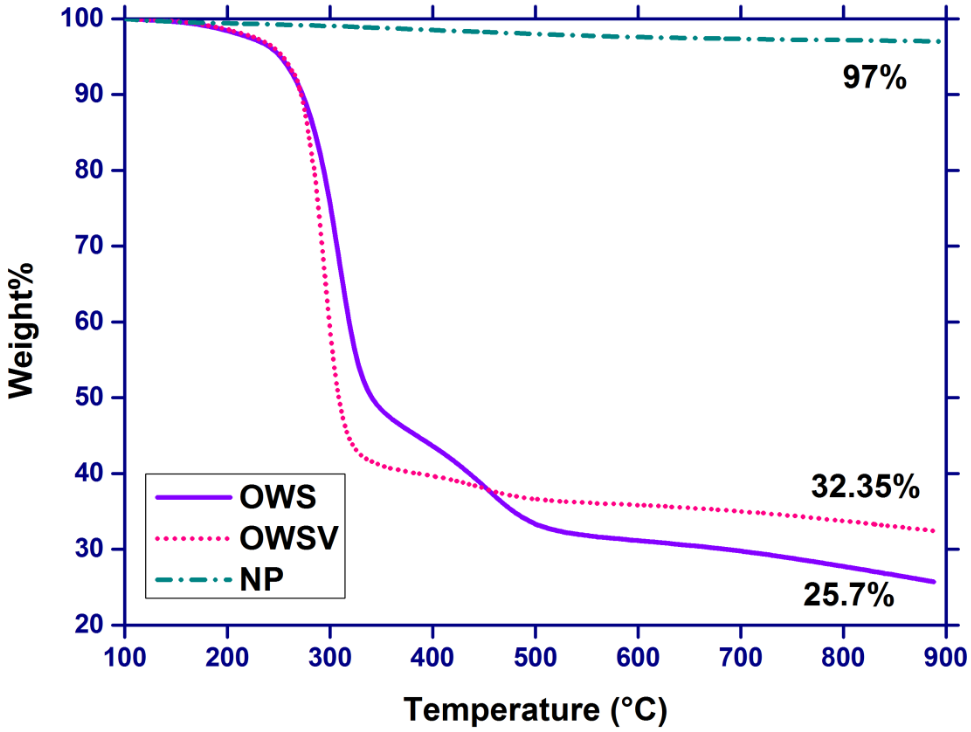
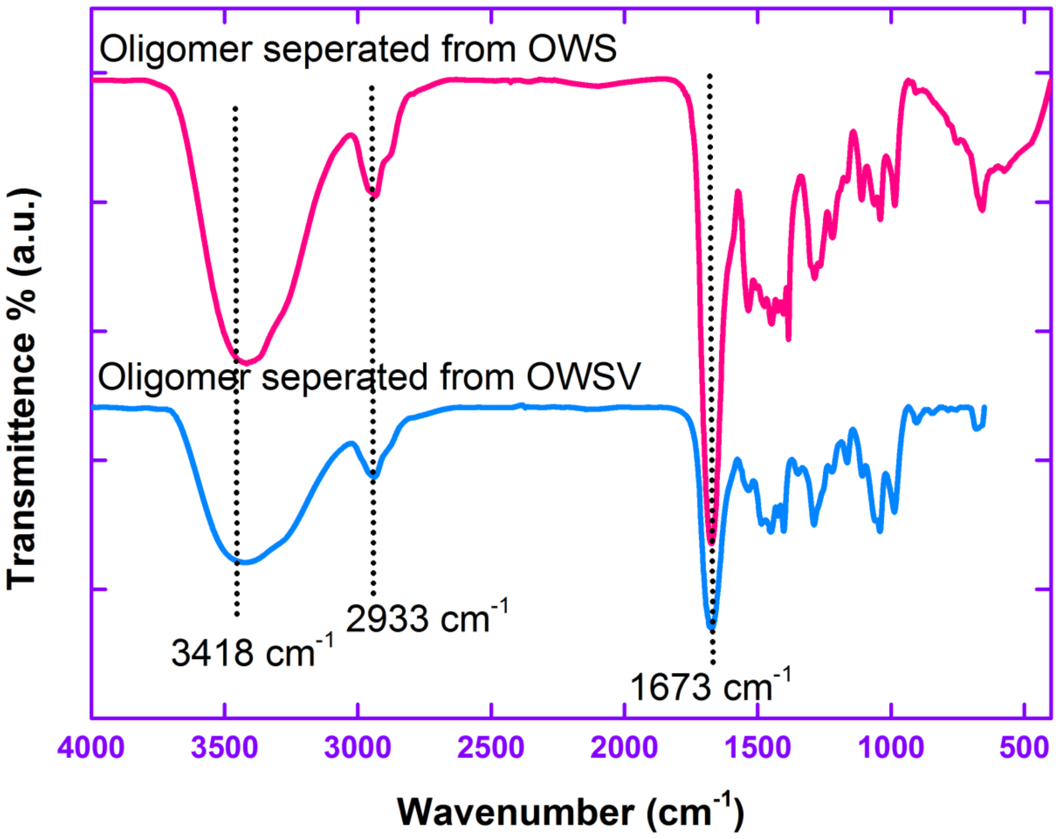
Electronic Supplementary Information



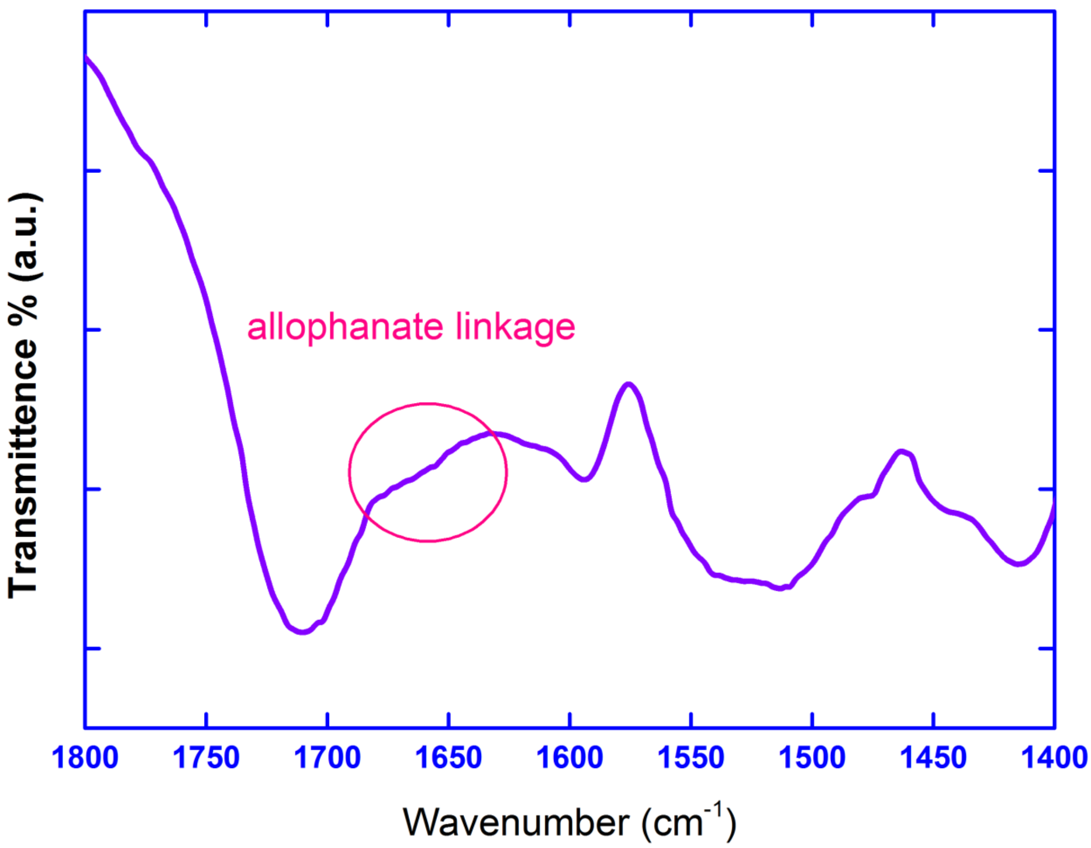
SI1 MALDI-TOF-MS spectrum of oligomer separated from OWS particles



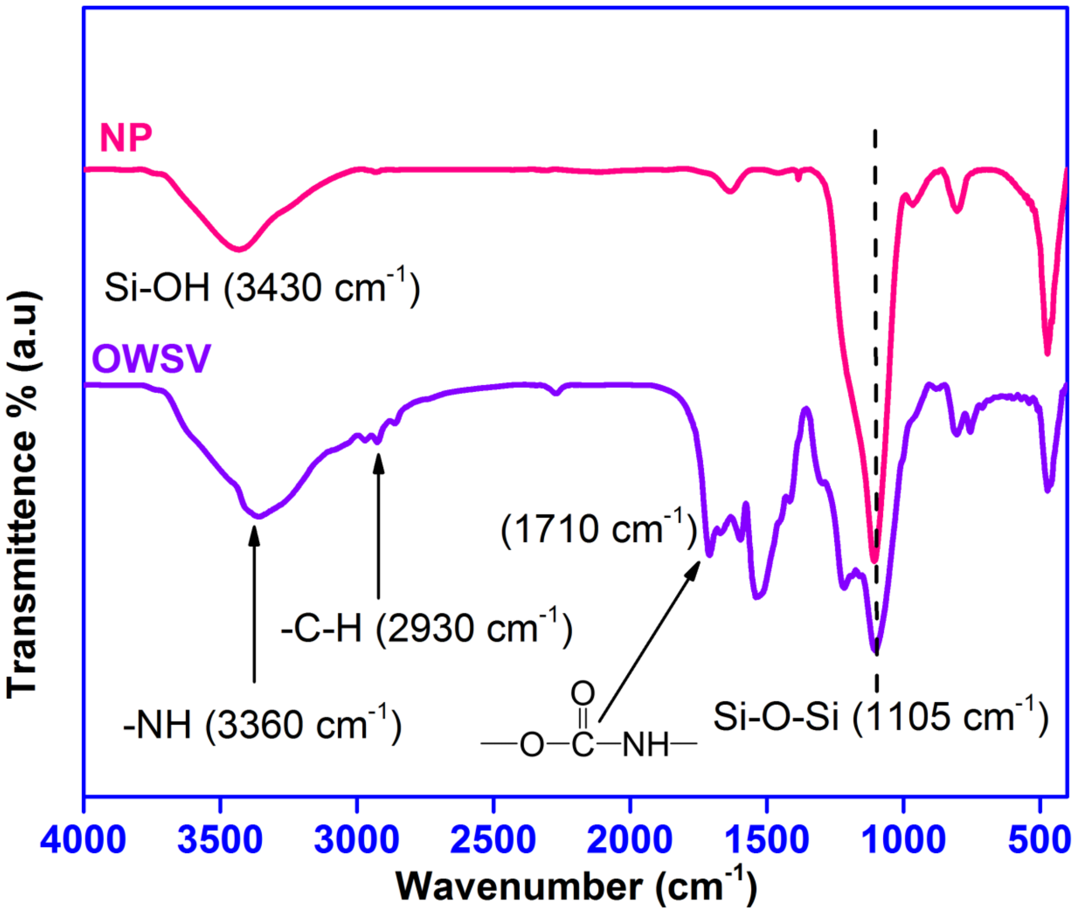
SI2 Thermogravimetric profiles of OWS & OWSV particles (10 °C/min., N_2)



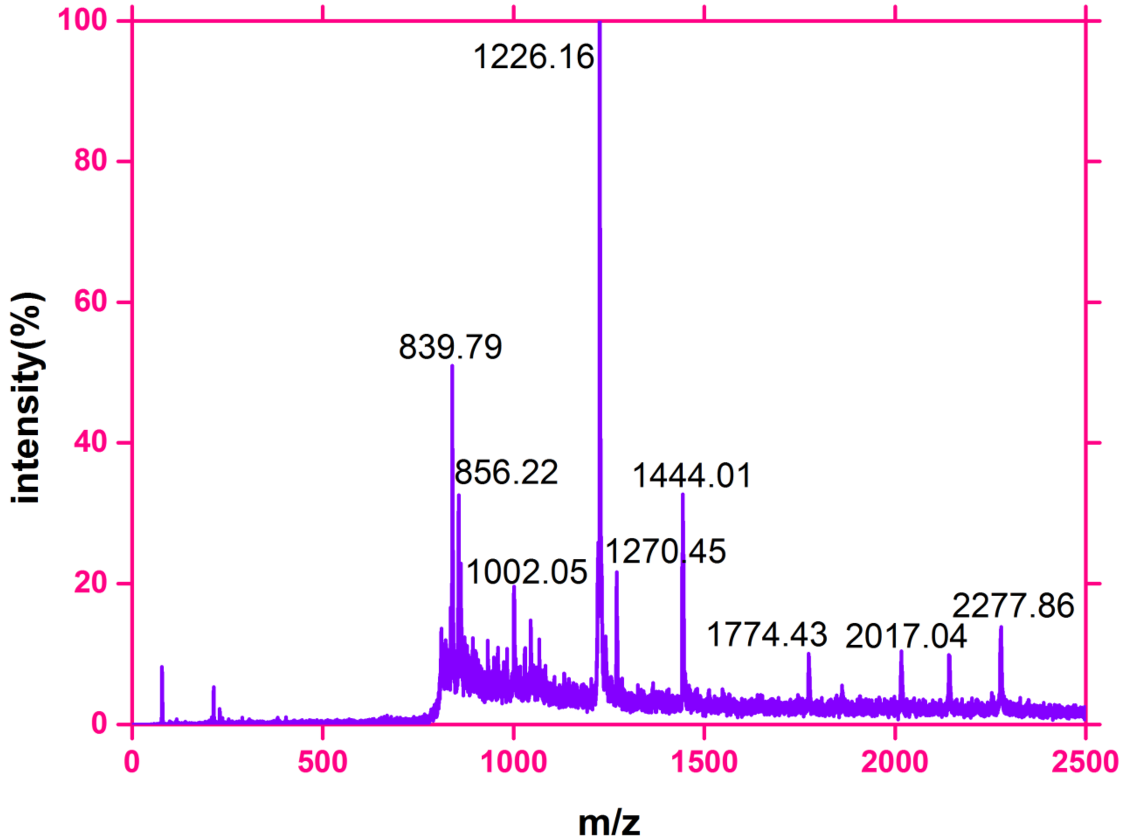
SI3 FTIR spectra of oligomers separated from OWS & OWSV particles which show the allophanate linkage at 1673 cm^{-1}



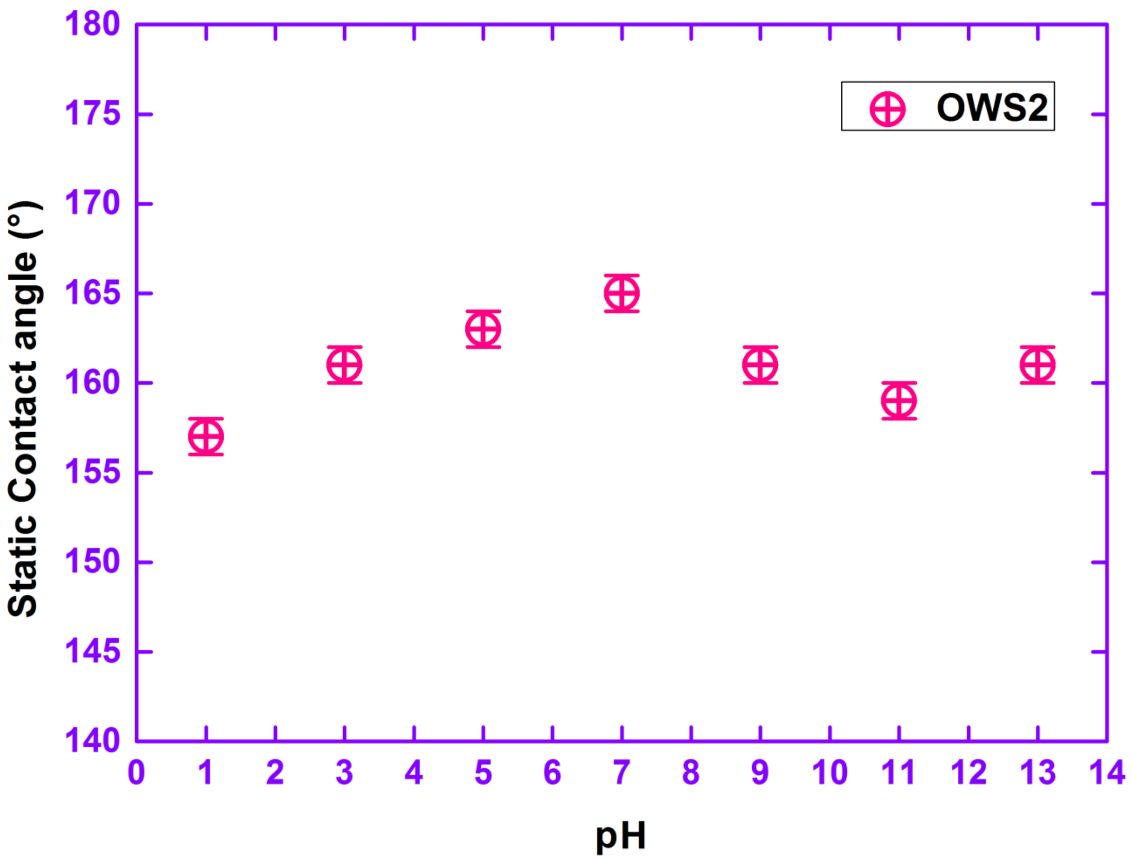
SI4 Observation of allophanate linkage at 1680-1620 cm^{-1} from FTIR spectrum.



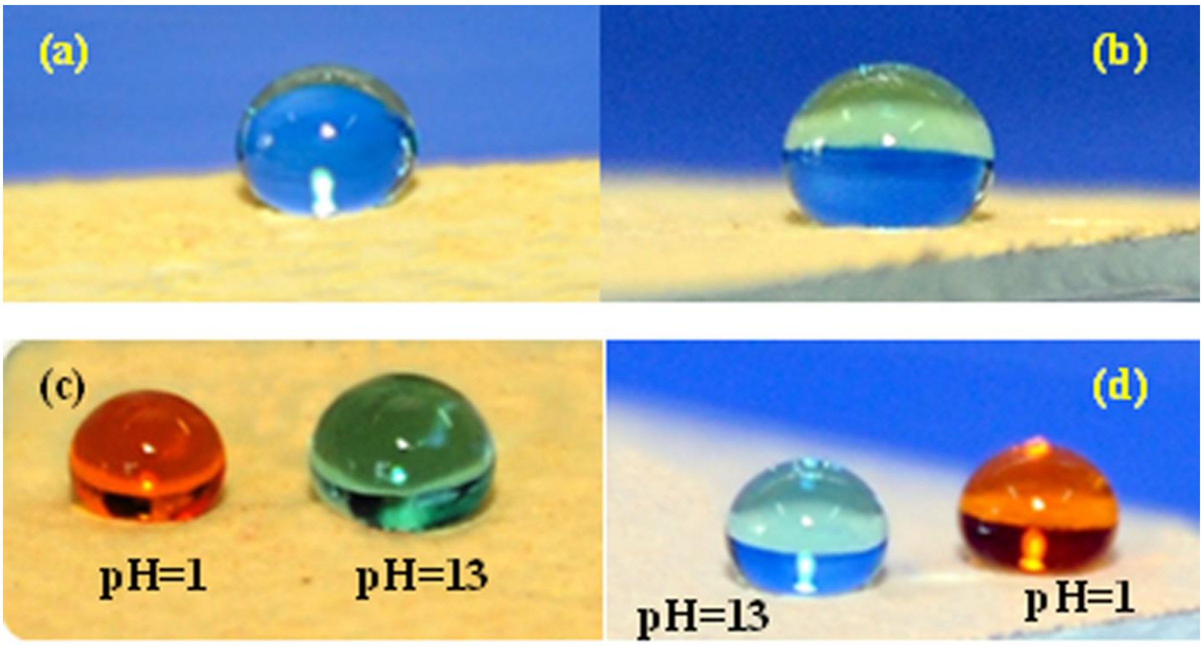
SI5 FTIR spectra of unfunctionalized silica and OWSV particles



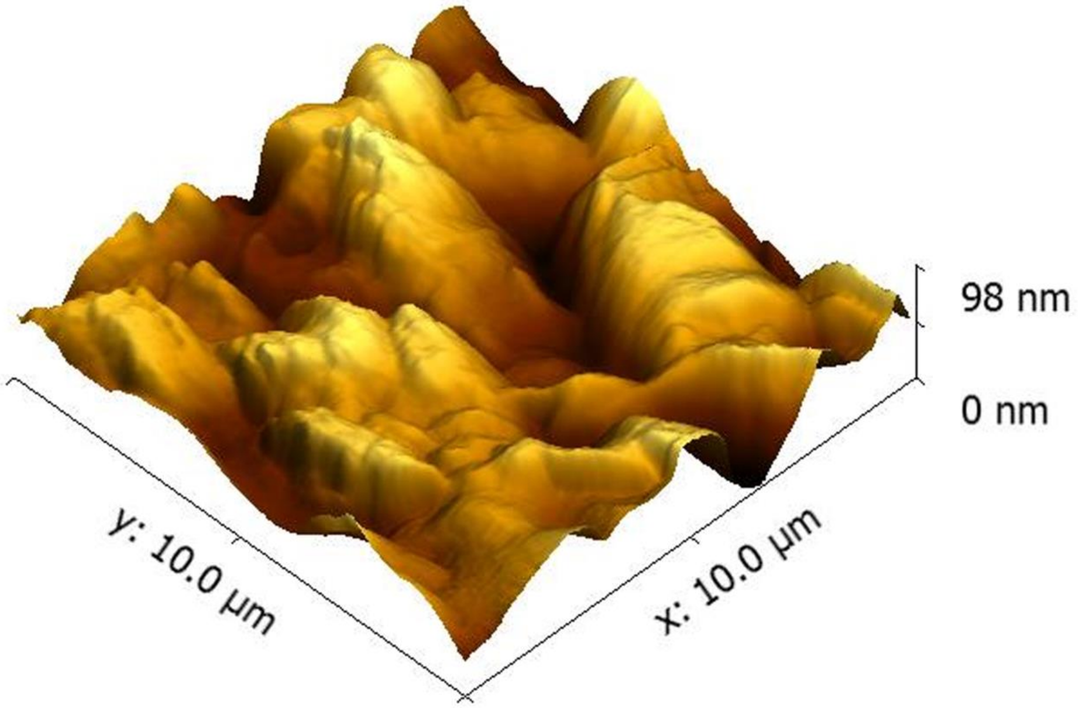
SI6 MALDI-TOF-MS spectrum of oligomer separated from OWSV particles



SI7 Variation in static contact angles of OWSV surfaces at different pH conditions



SI8 Profile of water droplets on superhydrophobic coating a) water droplet before treatment b) water droplet on self-recovered surface after water impalement test c) acidic and basic water droplets just after stress test d) acidic and basic water droplets on self-recovered surface after stress test.



SI9 AFM image of self-recoverable coating. Scan area 10µm × 10µm

The water hammer pressure created by the water droplets is given by (*Ref: Y. C. Huang, F. G. Hammitt and W. J. Yang, Journal of Fluids Engineering, 1973, 95, 276-292).*

The velocity of water droplet V **= (2gh)** ^{½} (for freely falling body)

(Initial (potential energy+ kinetic energy) =Final (PE +KE)

$$mgh + 0 = 0 + (0.5\ mv^2)$$

$$\text{i.e. } mgh = 0.5\ mv^2\text{, hence } V = (2gh)^{½}$$

***Here V= 3.13 m/s** (i.e. $g = 9.8\ m/s^2$, $h=0.5\ m$)*

Water hammer pressure, $P_h = 0.2\ \rho\ C\ V$

where ρ= density of water= 1000kg/m^3

C= velocity of sound in water at 28 °C=1500 m/s

V=velocity of water= 3.13 m/**s**

Water hammer pressure, P = 0.2(1000) (1500) (3.13) =939 kPa = ~ 1 MPa

SI10 Calculation of water hammer pressure.