

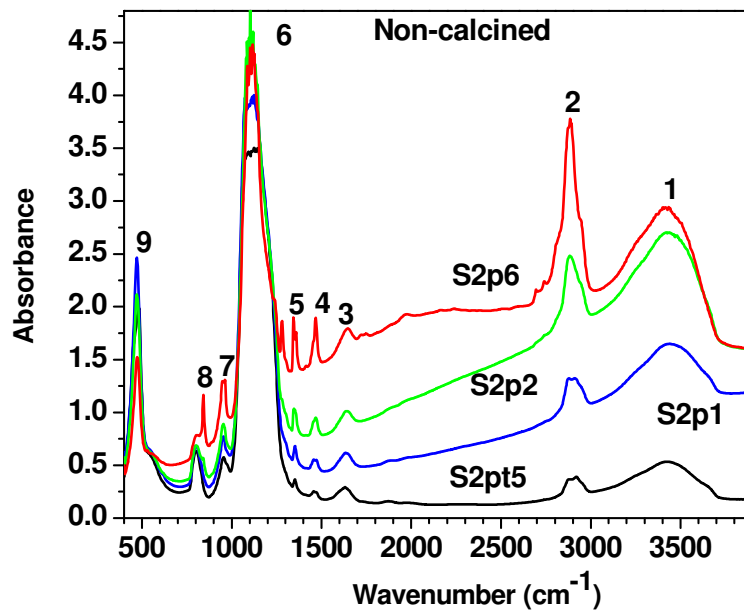


Fig. S1 Infrared spectra of the non-calcined dried grains for varying concentration of PEG1450

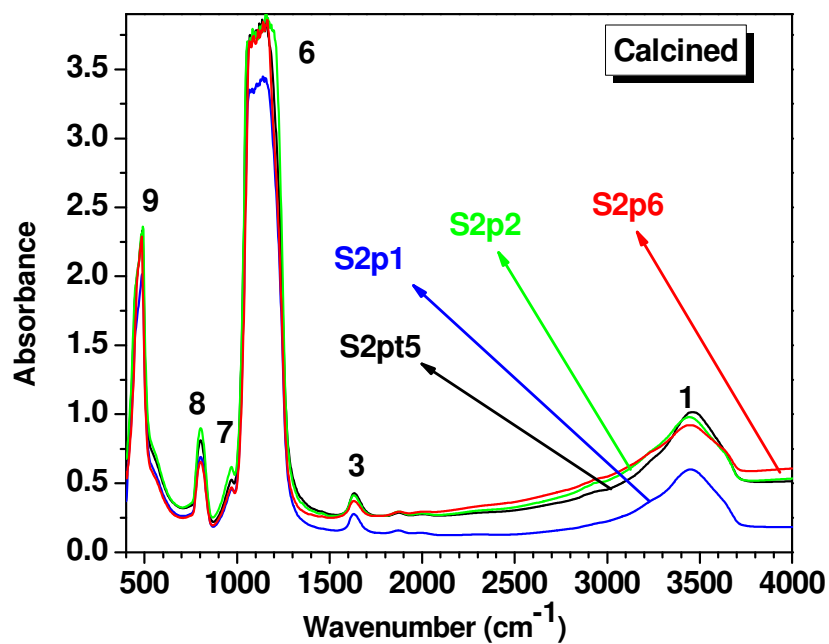


Fig. S2 Infrared spectra of the calcined grains for varying concentration of PEG1450.

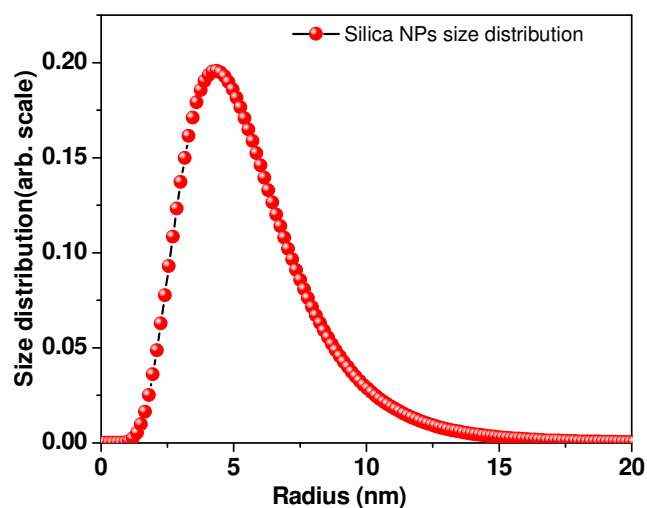


Fig. S3 Silica NPs size distribution as obtained by SANS data analysis.

Table-S1 Infrared modes in the specimens containing PEG. The modes which are in bold represent the IR modes in the calcined specimens.

IR Modes	Approximate peak position	Assignment
1	3435 cm⁻¹	-OH Stretching
2	2890 cm ⁻¹	-CH Stretching
3	1635 cm-1	-OH Bending
4	1464 cm ⁻¹	-CH Bending
5	1352 cm-1	-CH Bending
6	1102 cm-1	Si-O-Si Stretching
7	952 cm-1	Si-OH
8	801 cm-1	Si-O Bending
9	473 cm-1	Si-O out of plane rocking vibration