Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B.

Electronic Supporting Information

The physics and chemistry of silica-in-silicates nanocomposite hydrogels and their phycocompatibility

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ESI-1 : Experimental details on cell culture

ESI-2 : Evolution of gelation time and optical density at 400 nm with total silica concentration at pH 7, 6 and 5.

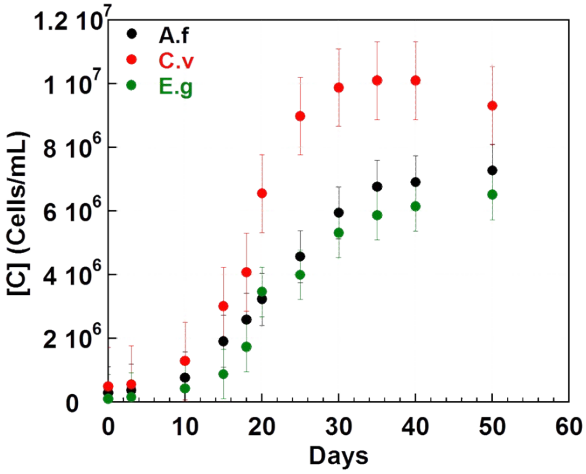
ESI-3: TEM images of gels at various pH, silicates and Ludox concentrations.

ESI-4 Macroscopic observations of cell suspension at various pHs

ESI-5 TEM images of cells encapsulated at various pH and silicate concentration

ESI-1 : Experimental details on cell culture

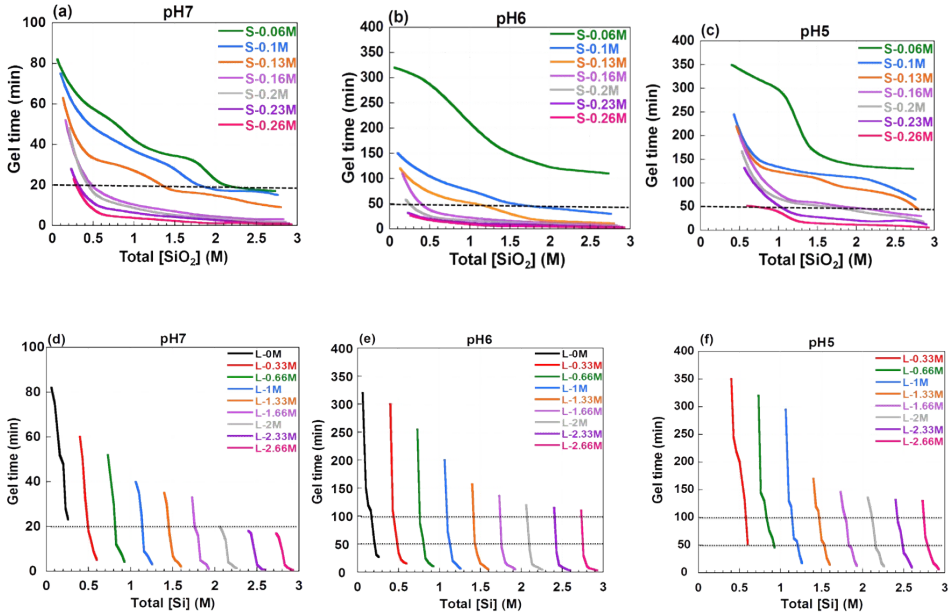
Bold Basal (BB) medium for *A. flos-aquae* and *C. vulgaris* culture and mineral (M) medium for *E. gracilis* culture were prepared according to the literature.[1] All culture media are sterilized by autoclaving (130° C, 20 min, 220 kPa) before use. The micro-algae keeped in erlenmeyer flasks, are placed in growth chamber conditioned to (20.0 ± 1.0) °C and is manually shaked once a day at least. The luminosity is adjusted to the optimal intensity for each strain through neon lights (30-60 µmol m^{-2} s^{-1} photosynthetic photon flux (PPF) for cyanobacteria, 40-70 µmol m^{-2} s^{-1} for green micro-algae). Algae were maintained in nycthemeral cycles of 16 hours of illumination and 8 hours of darkness. Corresponding growth curves are provided below



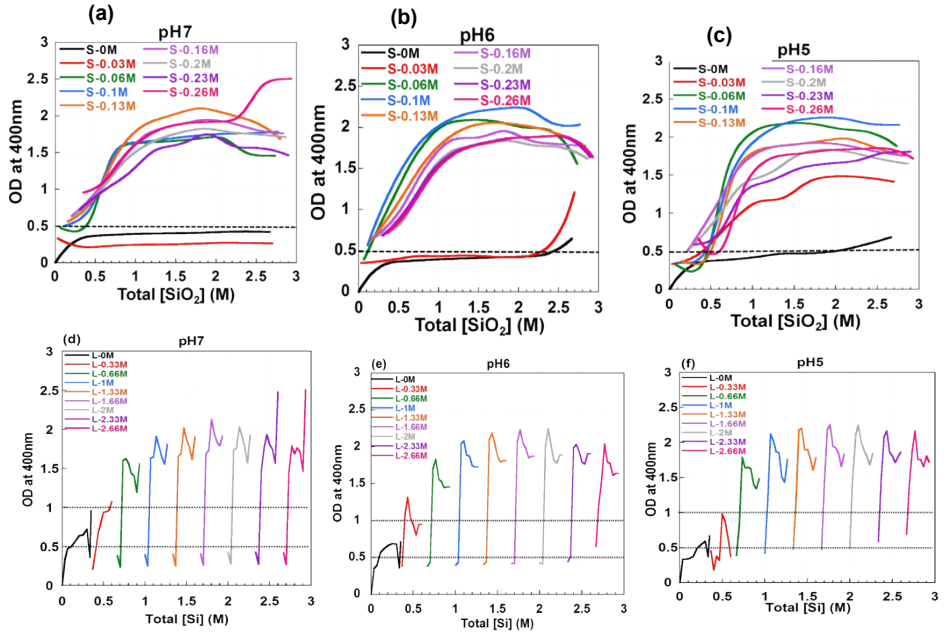
[1]Handbook of Phycological methods. Culture methods and growth measurements. Ed. J. Stein Cambridge University Press. 1973

ESI-2 : Evolution of gelation time and optical density at 400 nm with total silica concentration at pH 7, 6 and 5: (a-c) each color line is at fixed silicate (S) concentration; (d-f) each color line is at fixed Ludox (L) concentration. Dashed lines represent composition range where similar gel time or optical density can be obtained for different silicate or Ludox concentrations

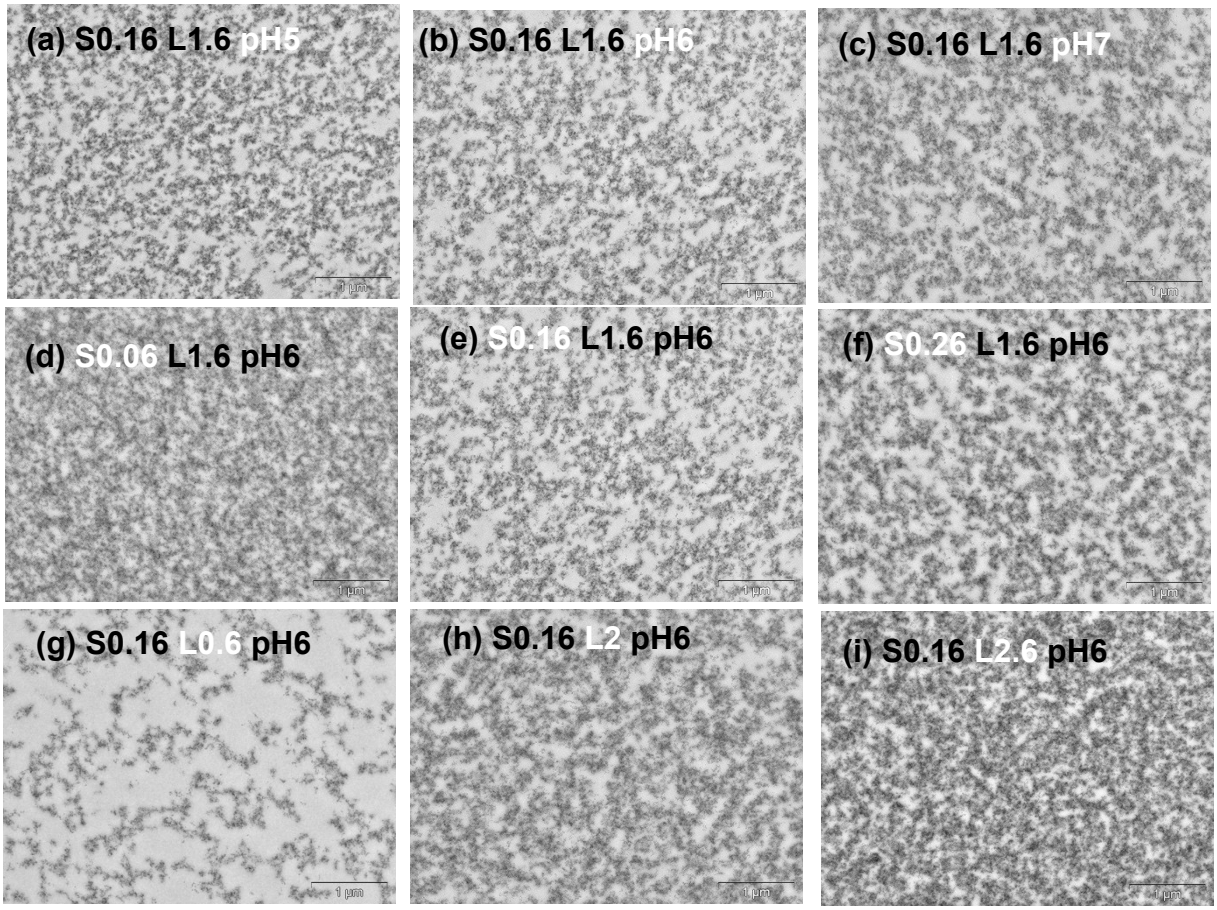
Gel time



Optical density

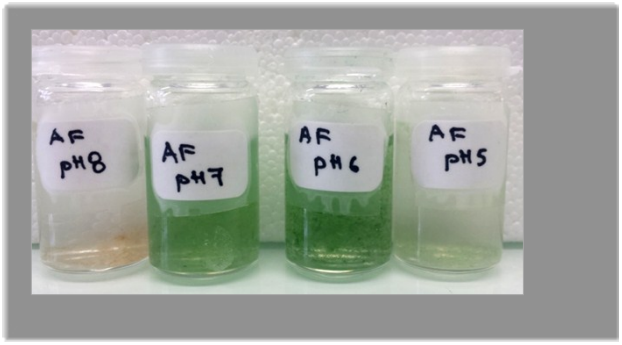


ESI-3 TEM images of gels (a-c) at fixed silicate and Ludox and variable pH, (d-f) at fixed Ludox and pH and variable silicate, (g-i) at fixed silicate and pH and variable Ludox (scale bar = 1 μm). S = silicate concentration (in M); L = Ludox concentration (in M).



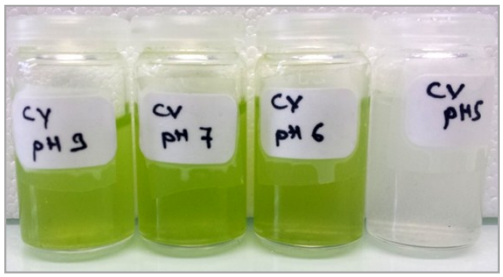
ESI-4 Macroscopic observations of cell suspension at various pHs

Anabaena flos-aquae



Euglena gracilis

Chlorella vulgaris



ESI-5 TEM images of cells encapsulated in a silica gel at pH 5 ([Ludox] = 1.6 M, [silicate] = 0.16 M) and at [silicate] = 0.26 M (pH 6, [Ludox] = 1.6 M)