



Surface modification using Nanoparticle to inhibit cellular proliferation

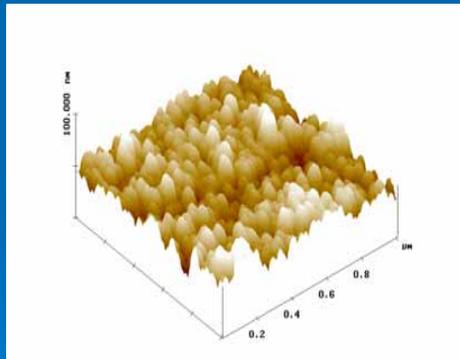
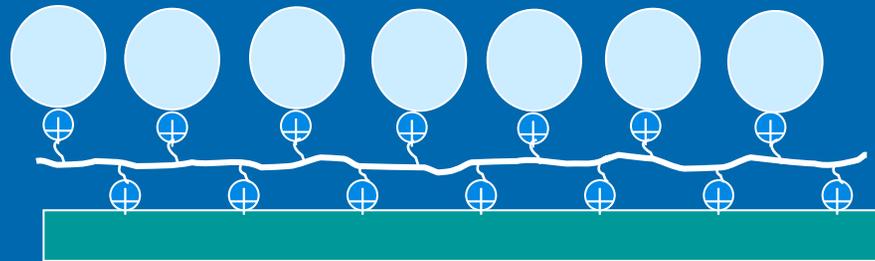
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Deposition of Nanoparticles to Manipulate Cellular Response

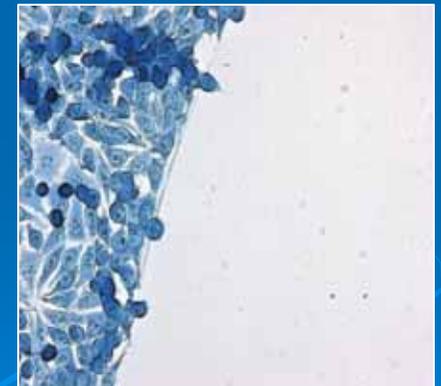
Silica nanoparticles strongly adhered to surfaces via a simple deposition process.

Surfaces show no cytotoxicity but influence the spreading behaviour of the cells. Subsequent reseeding of the cells results in normal growth and spreading.



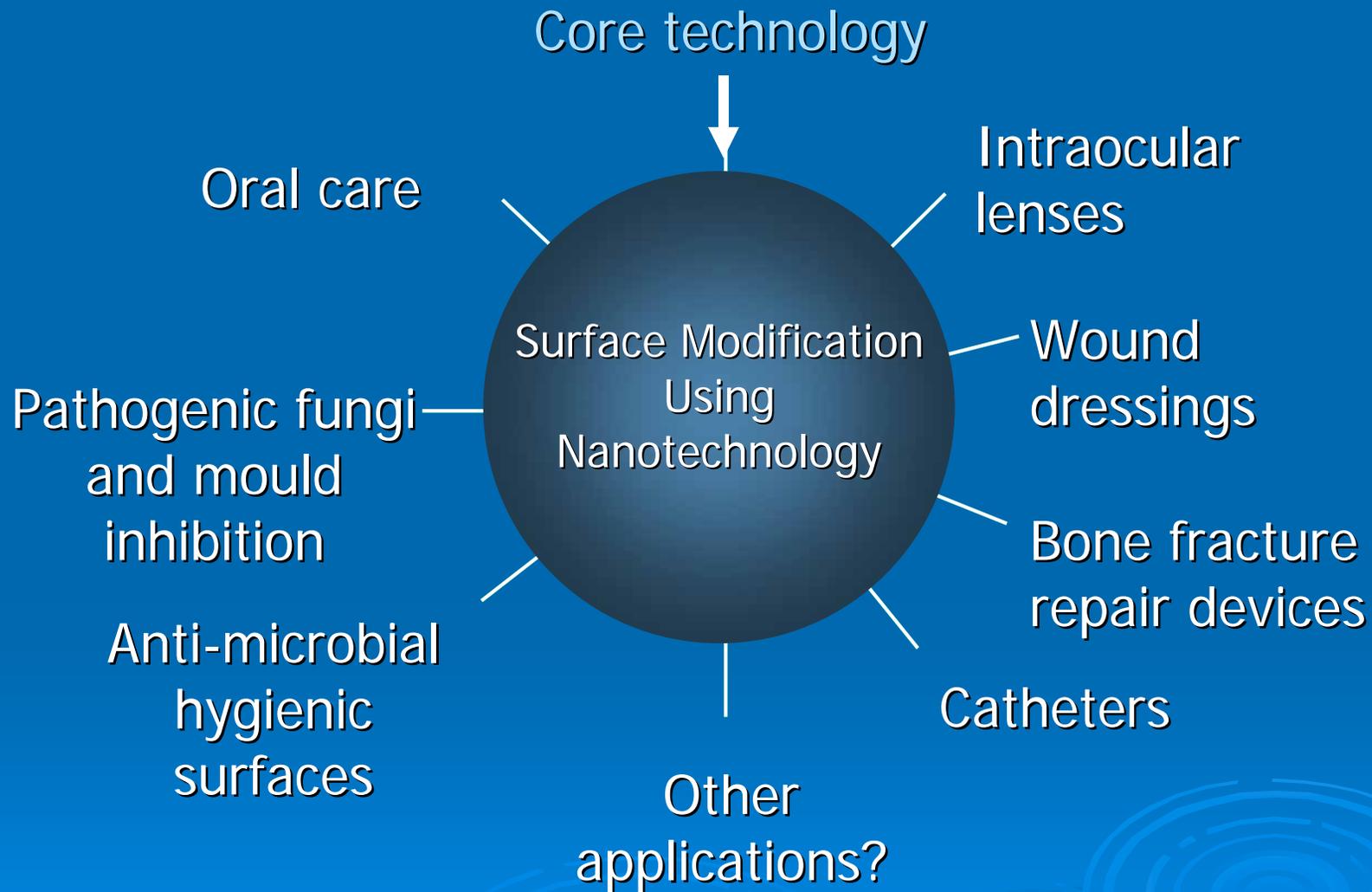
Nanoparticles with sizes <100nm can be deposited

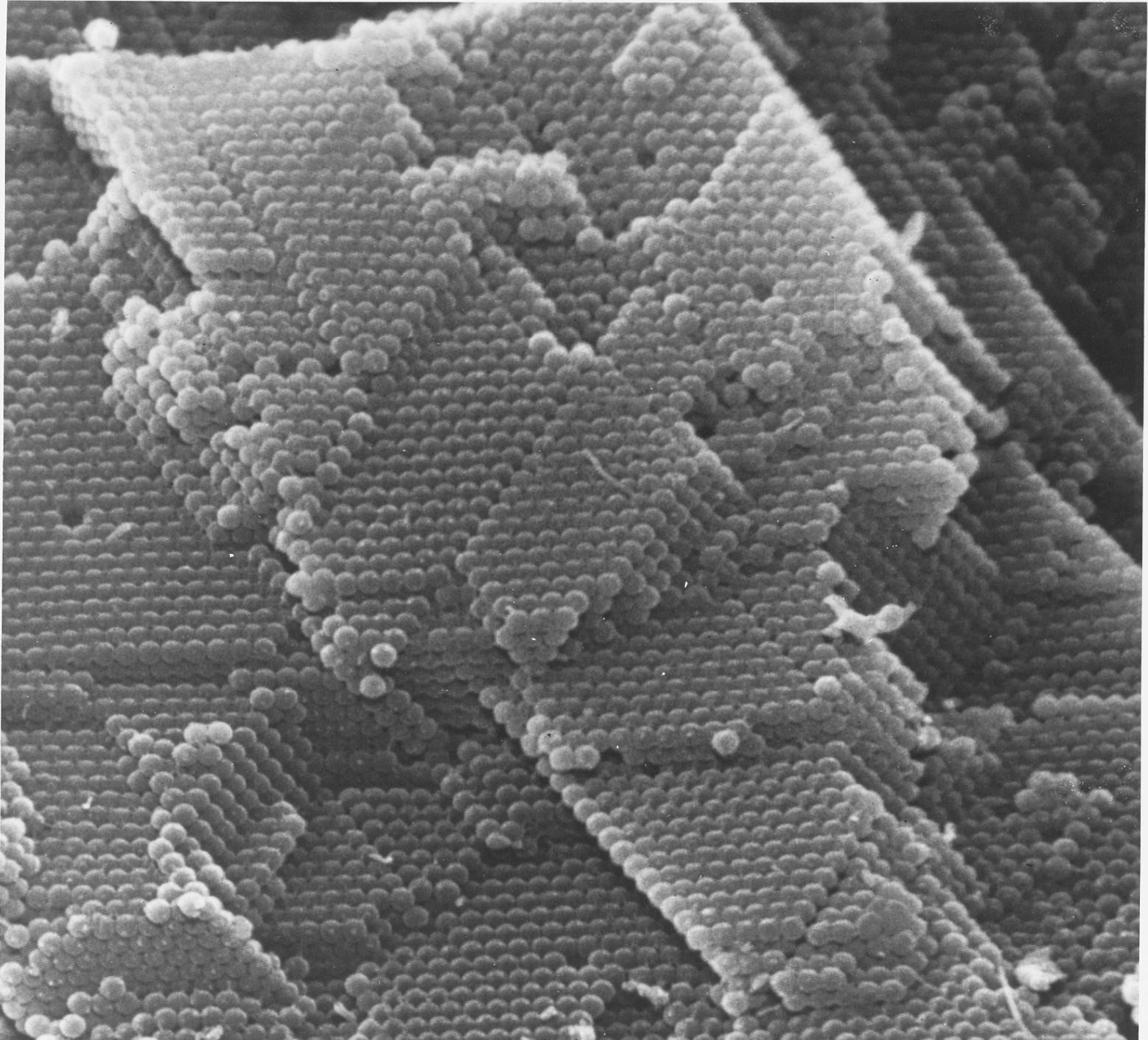
The adhesion of *S. mutans* is reduced on the silica treated surface



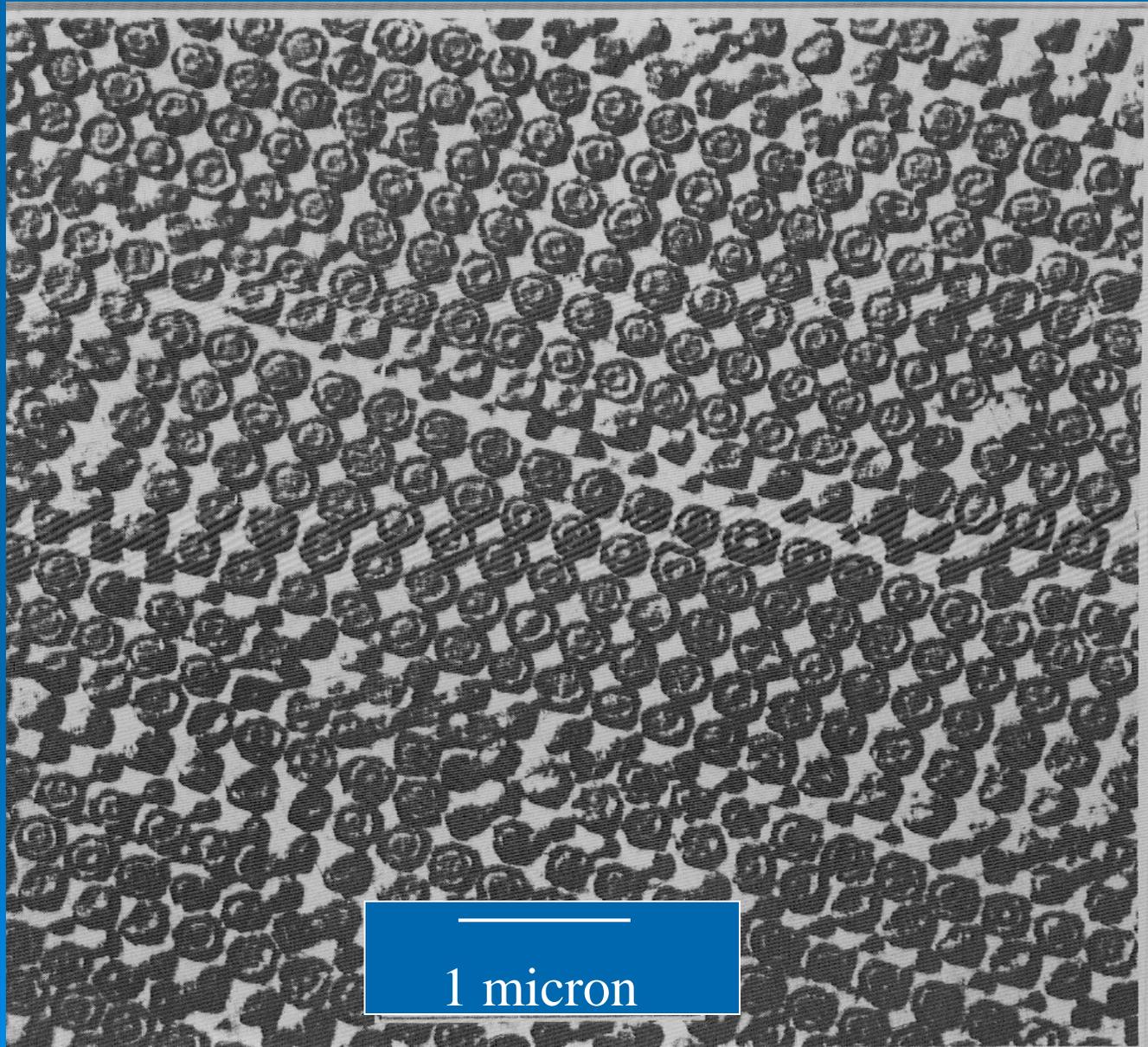
Cells on the untreated surface do not spread onto the treated surface.

Potential Applications of Core Technology





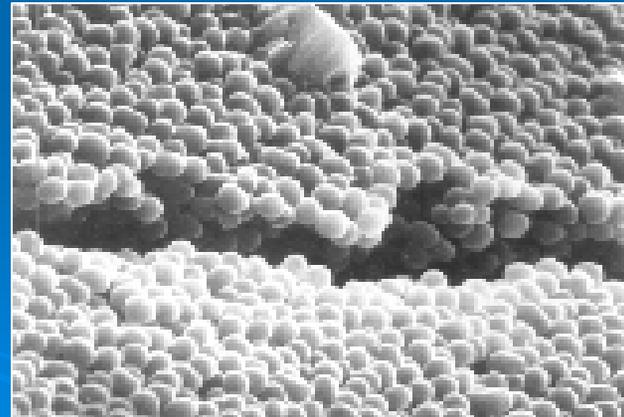
OPAL



- The subunits of colloidal silica are non-porous, spherical particles of ~10nm
- Silica is present in all connective tissues (collagen, arterial cell walls) along with nails, skin and hair
- Exists in nature in plants, diatoms and opal

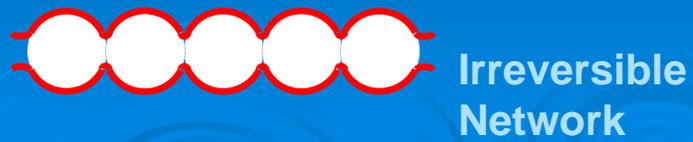
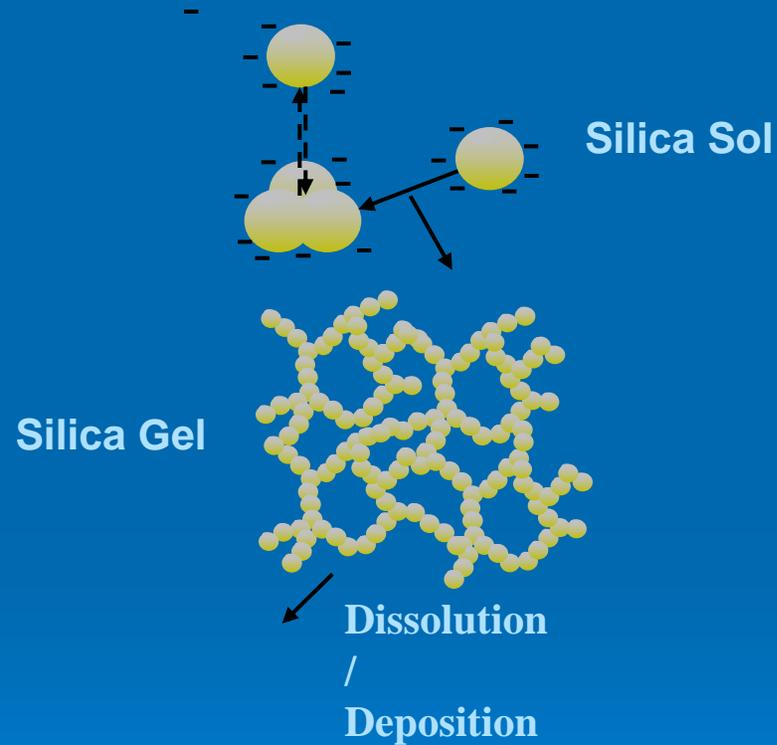


Diatoms

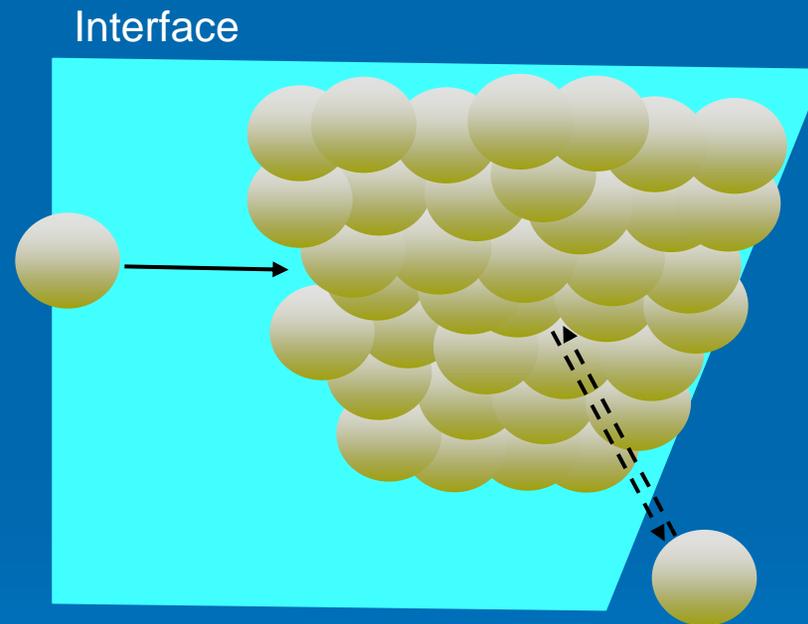
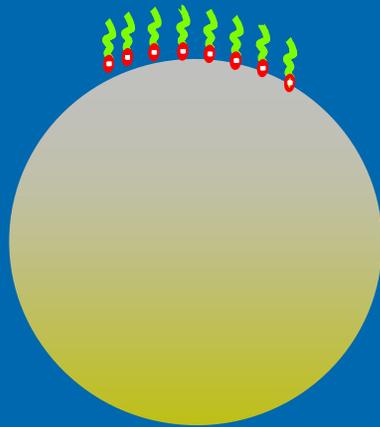


Opal

Colloidal Silica
aggregates in aqueous
dispersion to form
3-dimensional
irreversible gels

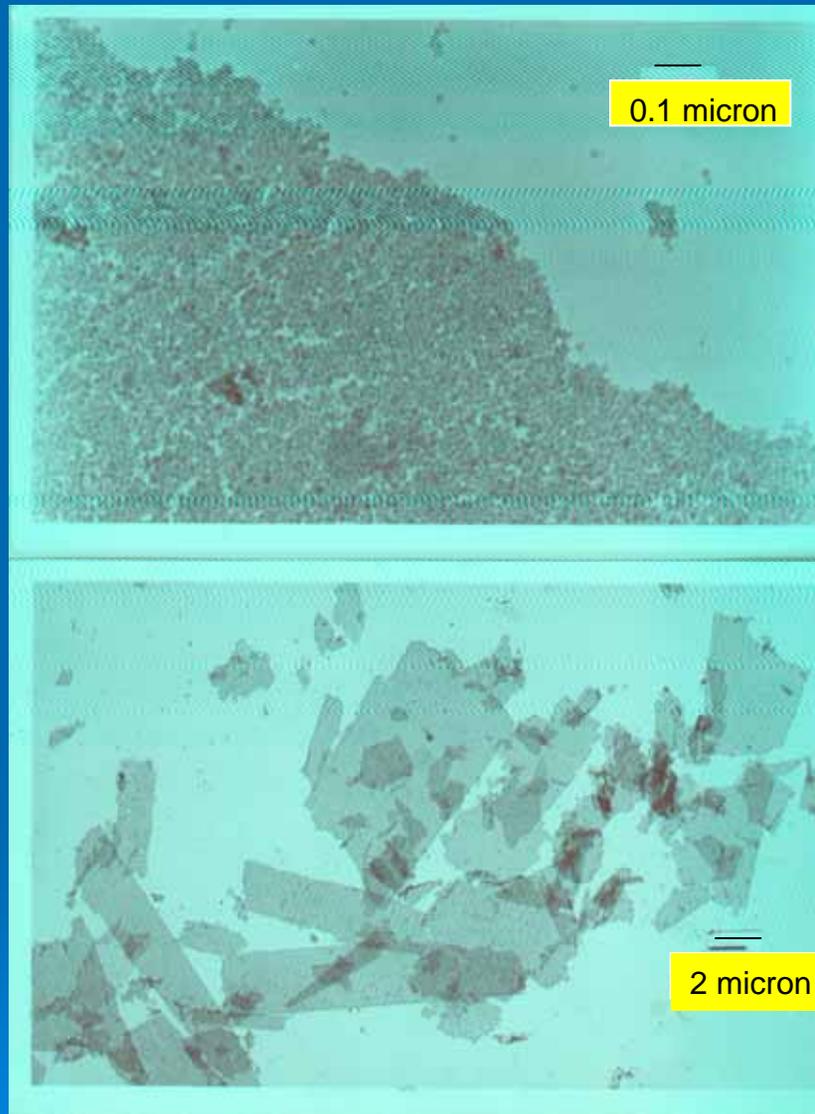


Low levels of adsorbed cationic surfactant render colloidal silica surface active.

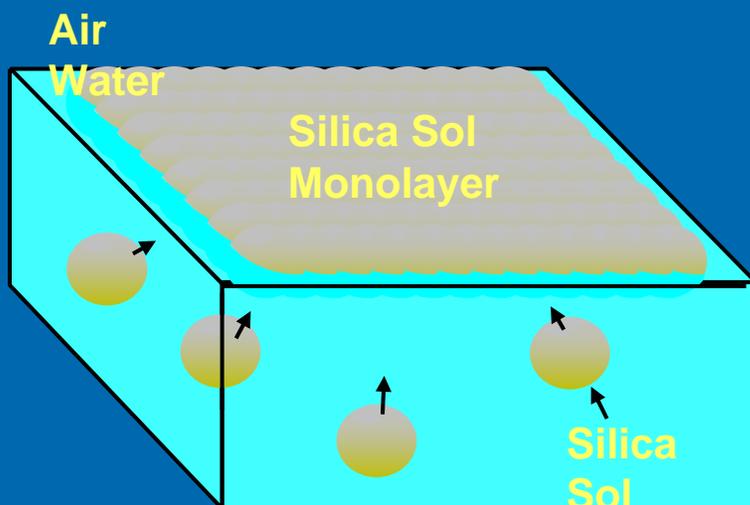


“Interfacial Gelation” of partially hydrophobed silica at an air or hydrophobic interface.

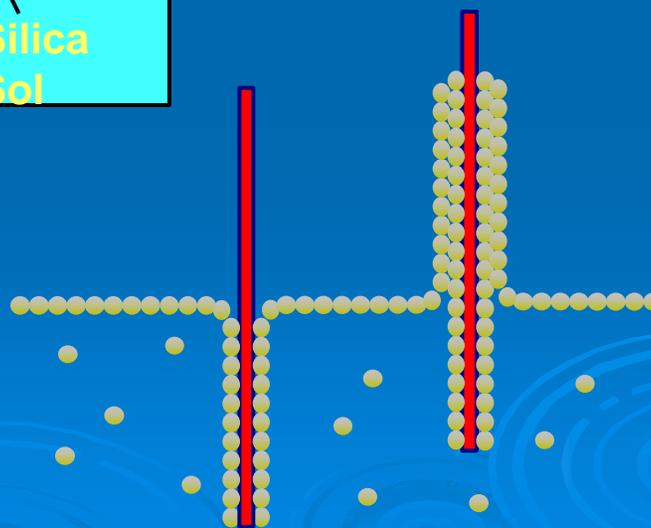
Two-dimensional aggregates silica



Interfacial Gelation of partially hydrophobed silica at the air/water interface.



LANGMUIR-BLODGETT
Type Deposition



Electron micrograph
of interfacial film of
14 nm silica particles

