

Supplementary materials

Procedure for cleaning the glass slides: Soda-lime glass slides were cleaned by heating them at 60°C for 12 hours in a 30% H₂O₂ : 70% H₂SO₄ solution. After thoroughly rinsing the surfaces in deionized water, the slides were sonicated for 30 minutes first in a 1M potassium hydroxide solution and then in deionized water.

Procedure for bonding the glass slides: The bonding solution contained 5nm and/or 7nm Luddox silica nanoparticles suspended either in a solution of potassium hydroxide or suspended in solution of potassium silicate and potassium hydroxide (see main text for concentrations). We put 3 μ l cm⁻² of the bonding solution between the cleaned glass slides and let them cure for at least 300 hours at room temperature. The bonding does not require any clean room facilities.

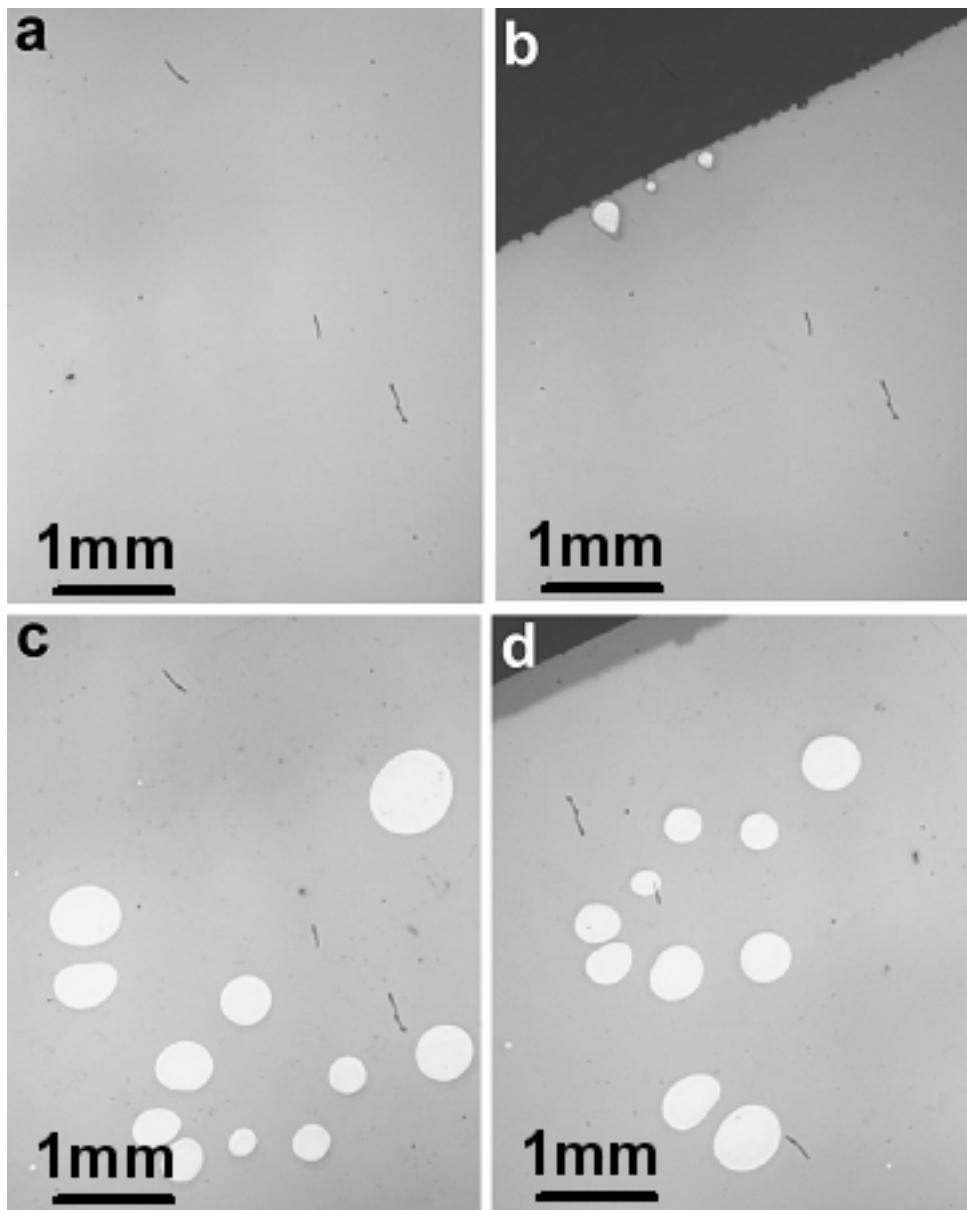


Figure 1: Bright-field images (7x magnification) of soda-lime glass slides bonded using nanoparticle mediated bonding (a), (b) and silicate bonding (c), (d). Panels (a) and (c) are images of the center of the bonded slides while panels (b) and (d) are images of the edges.

(a). The slides bonded using the silica nanoparticles were defect free on most of the bonded region. Soda lime glass microscope slides were bonded using 25.5% w/v Luddox

5nm silica nanoparticles suspended in a solution containing 10%v/v potassium silicate and 1M potassium hydroxide.

(b) Most of the defects in the slides bonded using the silica nanoparticles were along the edges of the bonded slides (average 8 defects per 75cm x 25cm bonded slide).

(c). The surfaces joined using the silicate bonding method contained an average of 79 large circular defects all over the bonded region. Soda lime glass microscope slides were bonded using 100% solution of potassium silicate ($\text{SiO}_2/\text{K}_2\text{O}$ mole ratio 3.3).

(d) The slides joined using the silicate bonding method did not have defects at the edges.