Supplementary Information
Silicon-based mesoporous photonic crystals: towards single cell optical biosensors

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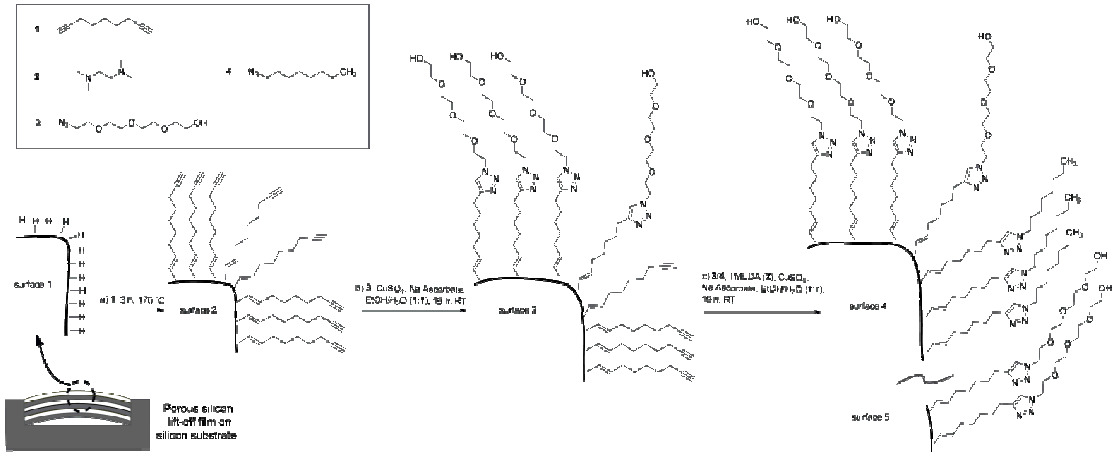

Scheme S1. The surface chemistry used to modify lift-off PSi rugate filters with different chemistries inside the pore spaces of the rugate filter and on the exterior surface

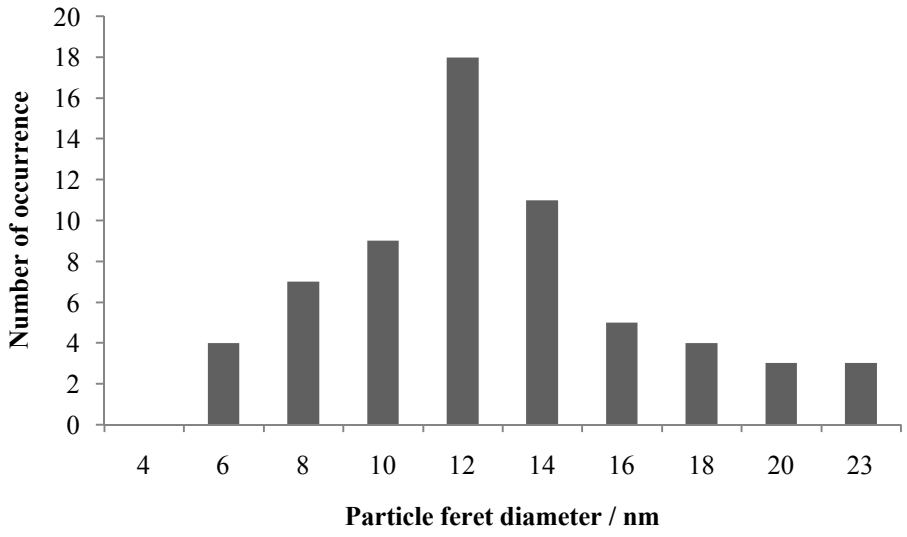

Figure S1. The histogram of size distribution of PSi particles used in stability test .

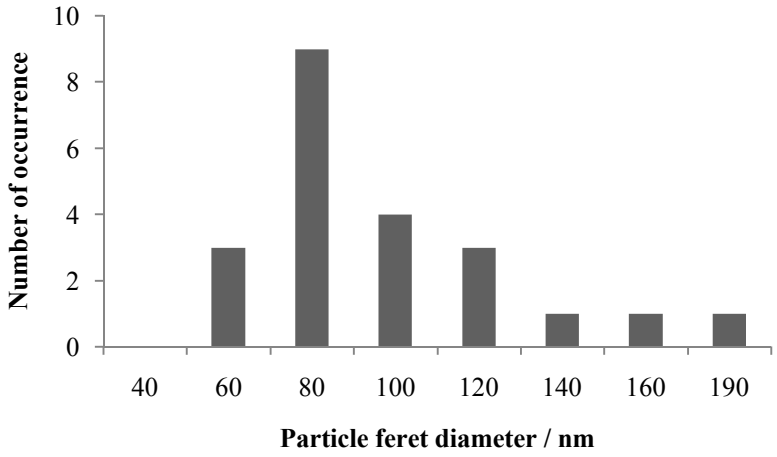

Figure S2. The histogram of size distribution of PSi particles used for antibody functionality test

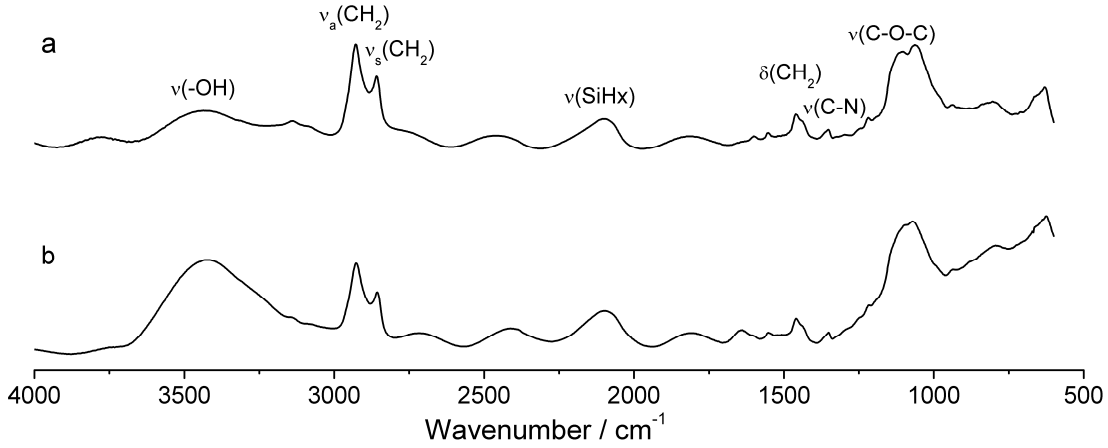

Figure S3. Comparison of FTIR spectra of the PSi structure with distal octane group inside the pores and ethylene glycol moieties on the exterior in lift-off films (a, before sonication) and in PSi particles (b, after sonication). Note that after sonication the only significant difference is an increase in the magnitude of the broad –OH stretch between 3200-3500 cm-1 range attributed to some water penetrating the pores during the sonication process.

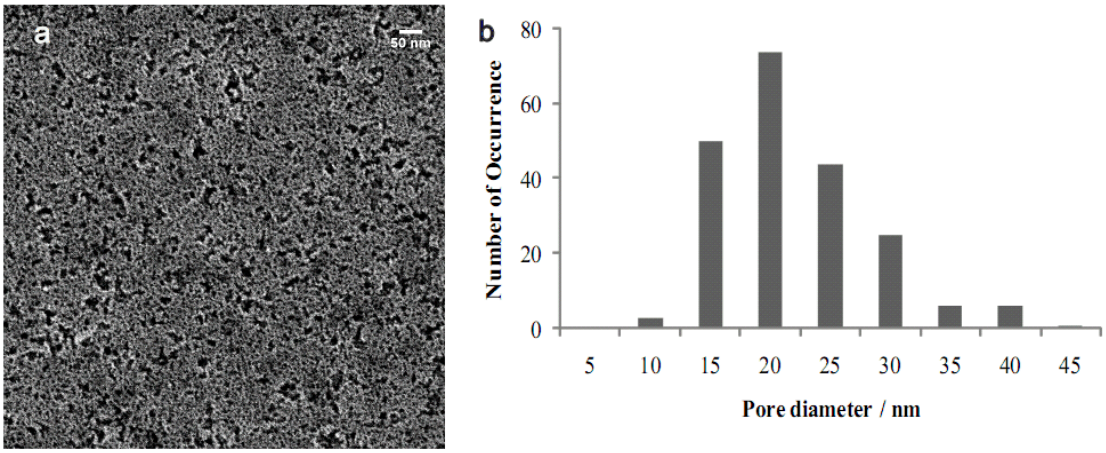

Figure S4. a) Top view scanning electron micrograph of the PSi rugate filter. b) Histogram of the pore size distribution.

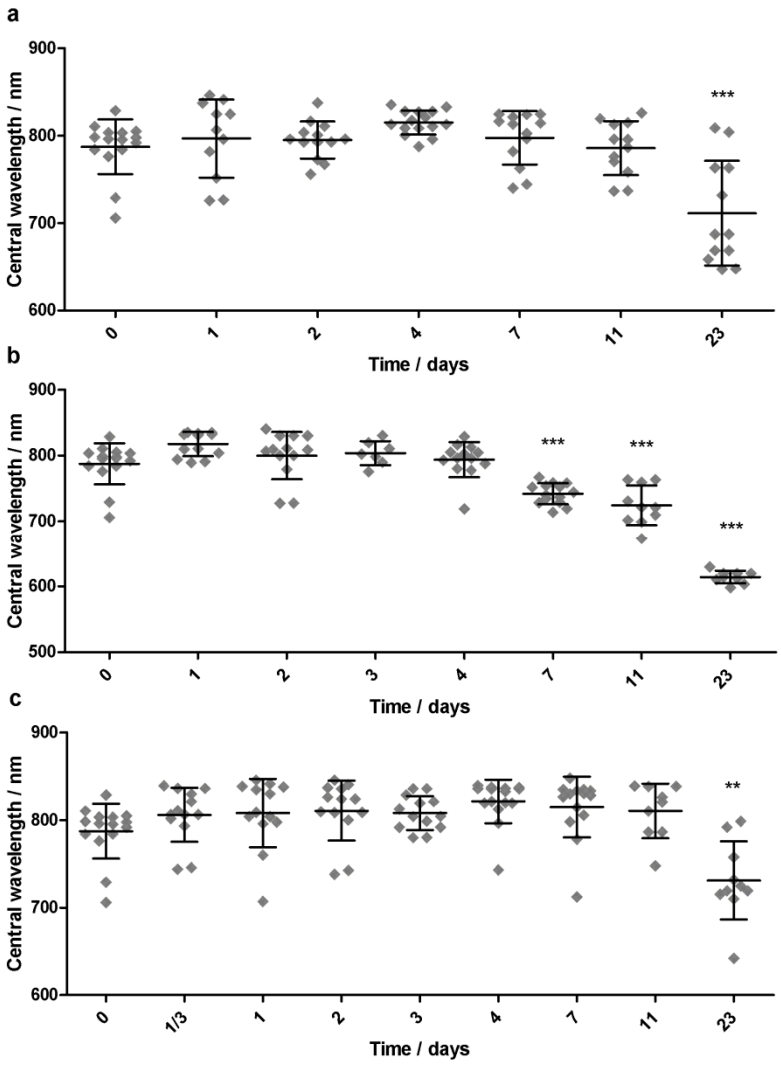

Figure S5. The same stability test performed with particles with optical signatures (Figure 5) in the visible region of the electromagnetic spectrum were also performed using particles with spectral signatures in the near IR. Again three media were used: PBS, DMEM and diluted human blood buffy coat. Stability of the near infrared ("tissue-window") reflectivity peak position for PSi particles with hydrophilic internal pores exposed to PBS (a), DMEM (b) and human bloodbuffy coat (c) over time. Asterisk stands for the significance level related to the start point (time 0) based on one way ANOVA analysis: *** (99.9% confidence).