

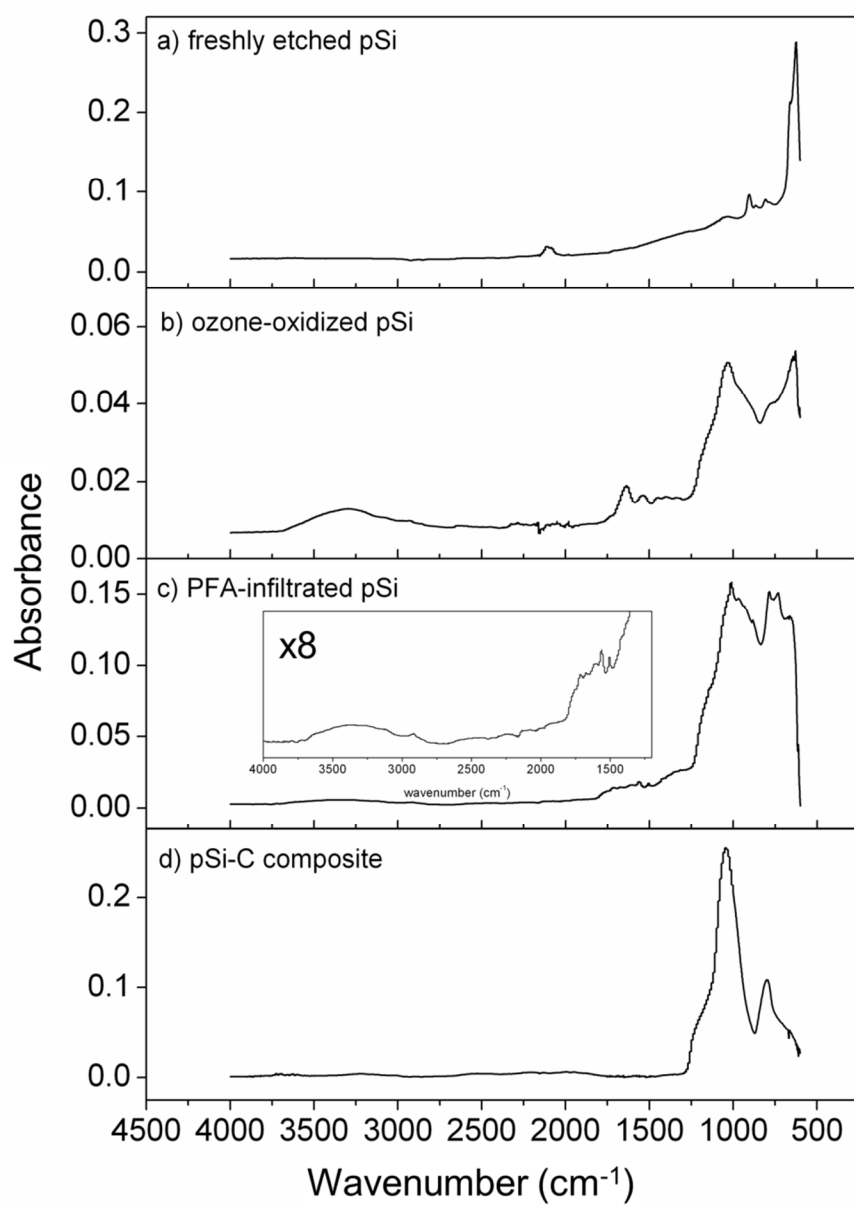
Supporting Information

Highly Stable Porous Silicon-Carbon Composites as Label-Free Optical Biosensors

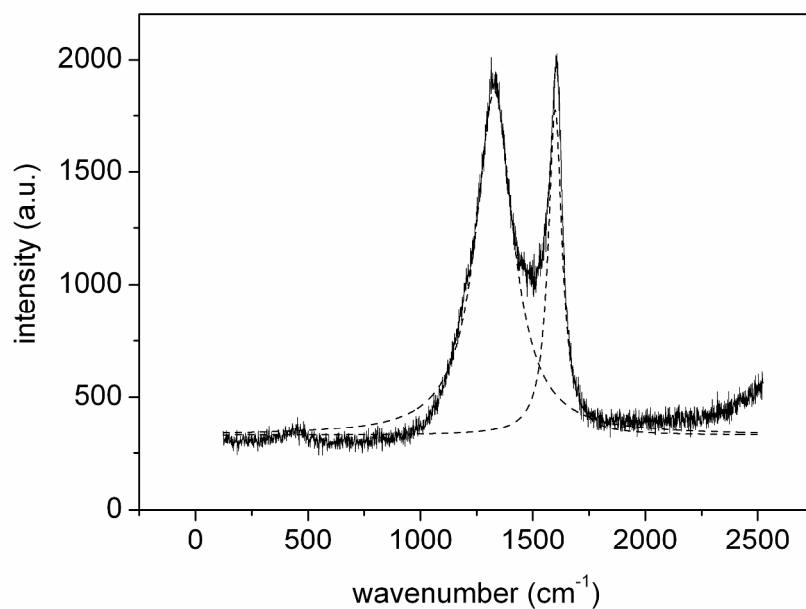
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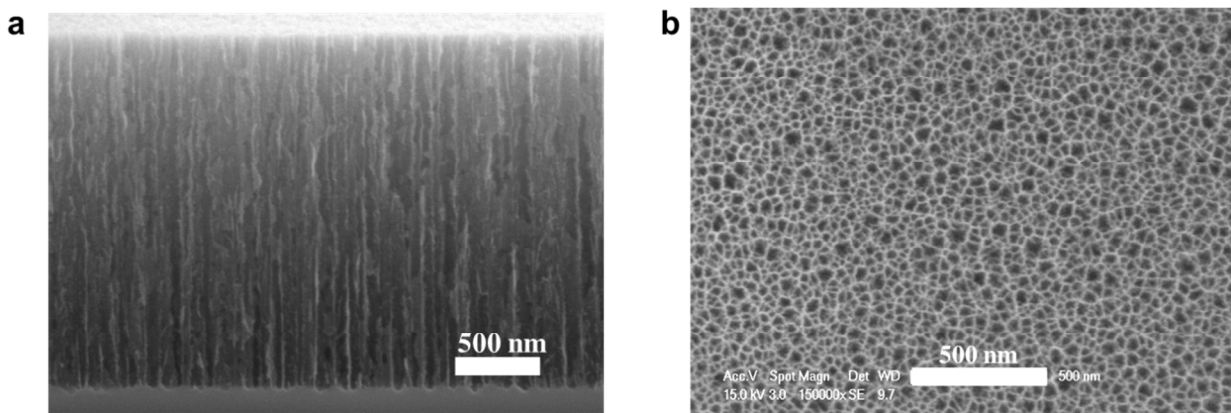
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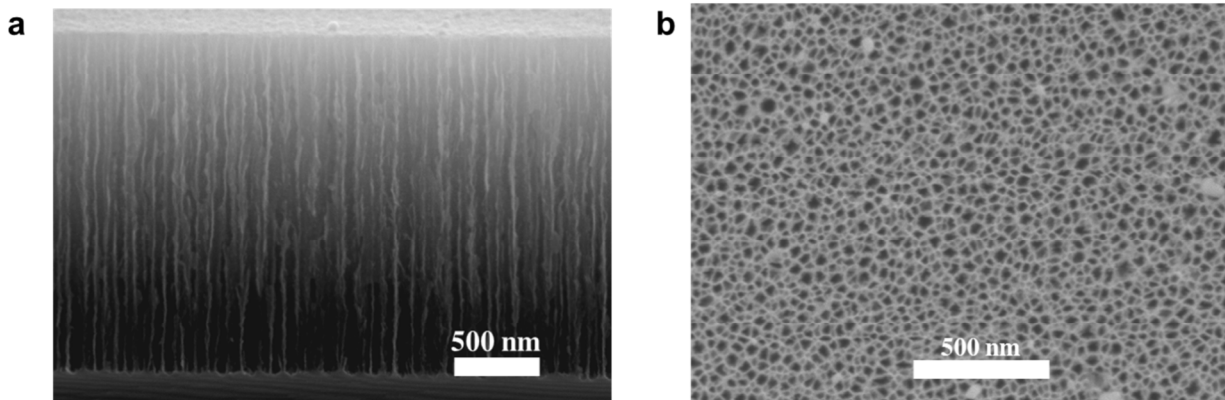
Supporting Figure S1. Attenuated total reflectance Fourier transform infrared (FTIR-ATR) spectra (a) freshly etched pSi; (b) ozone oxidized pSi; (c) PFA-infiltrated pSi; (d) pSi-C composite.



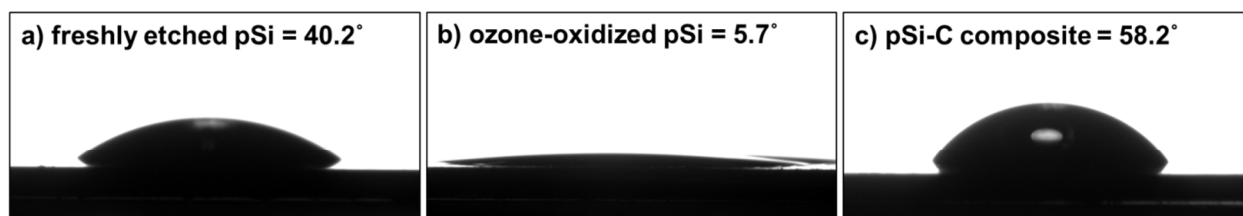
Supporting Figure S2. Raman spectrum of the pSi-C composite (solid line). Two Raman bands were observed at 1330 cm^{-1} and 1600 cm^{-1} which are assigned to D and G bands (dash line) respectively.



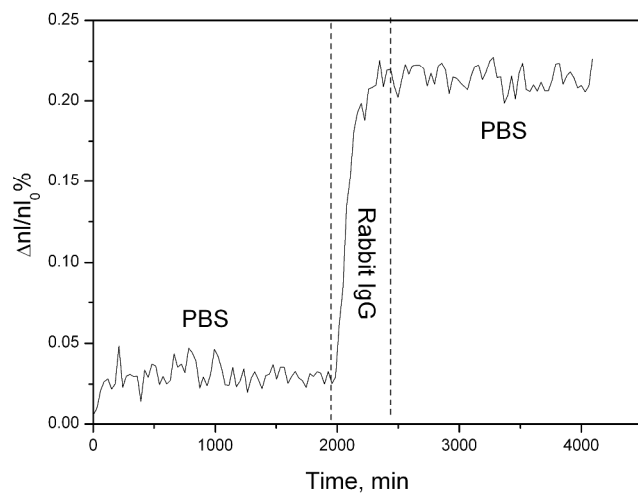
Supporting Figure S3. Field emission scanning electron microscope (FESEM) images of representative of the freshly etched porous silicon samples fabricated in this study: (a) cross-sectional image; (b) plan-view image.



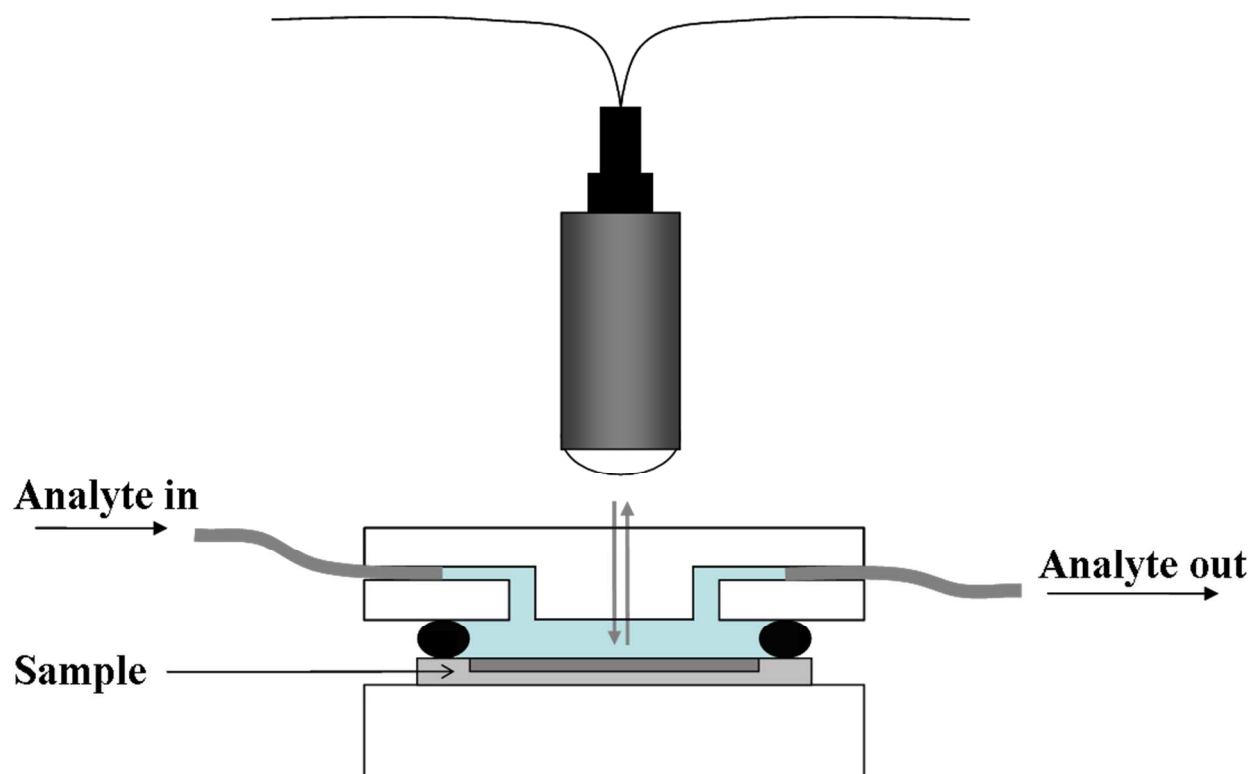
Supporting Figure S4. Field emission scanning electron microscope (FESEM) images representative of the PFA-infiltrated pSi samples fabricated in this study. (a) cross-sectional image; (b) plan-view image.



Supporting Figure S5. Contact angle measurement photographs, obtained using a Rame-Hart Goniometer (model 500), of (a) freshly etched pSi, (b) ozone-oxidized pSi, and (c) a pSi-C composite.



Supporting Figure S6. Temporal optical response of the pSi-C biosensor, upon exposure to rabbit IgG (without prior adsorption of protein A). Sample cell was flushed with pure aqueous PBS buffer before and after analyte introduction, as indicated (“PBS”). The Y axis represents the change in optical thickness in %, as defined in eq. 2. Flow rate for all solutions was 0.5 mL min⁻¹.



Supporting Figure S7. Schematic diagram of the flow cell setup used in biosensing and aqueous stability experiments.