Supplementary Information

Substrate independent assembly of optical structures guided by biomolecular interactions

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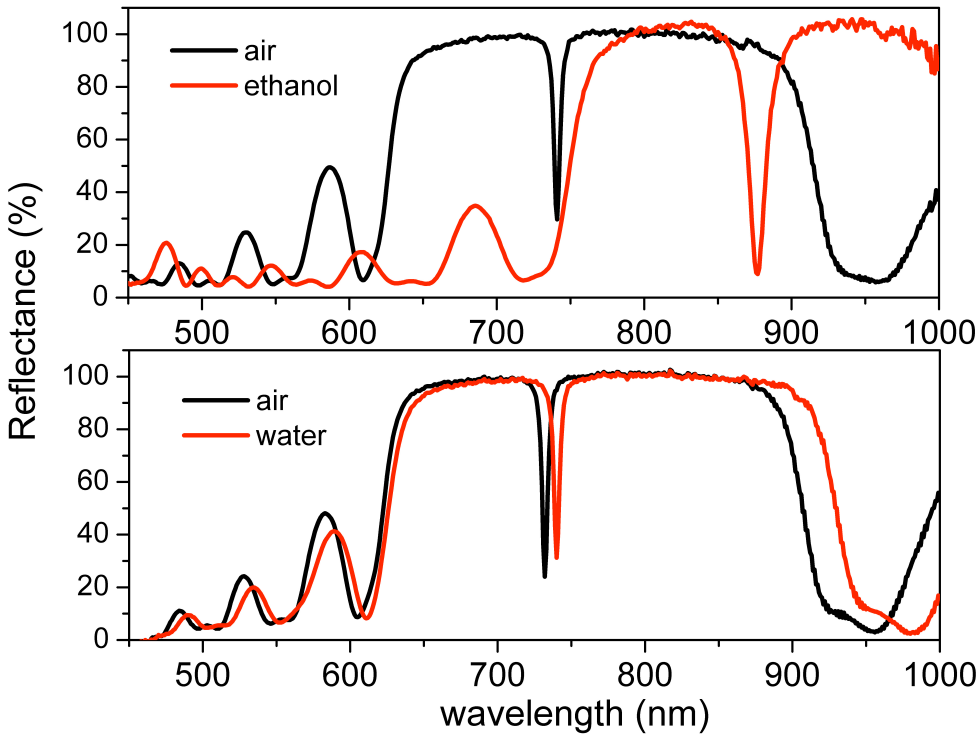
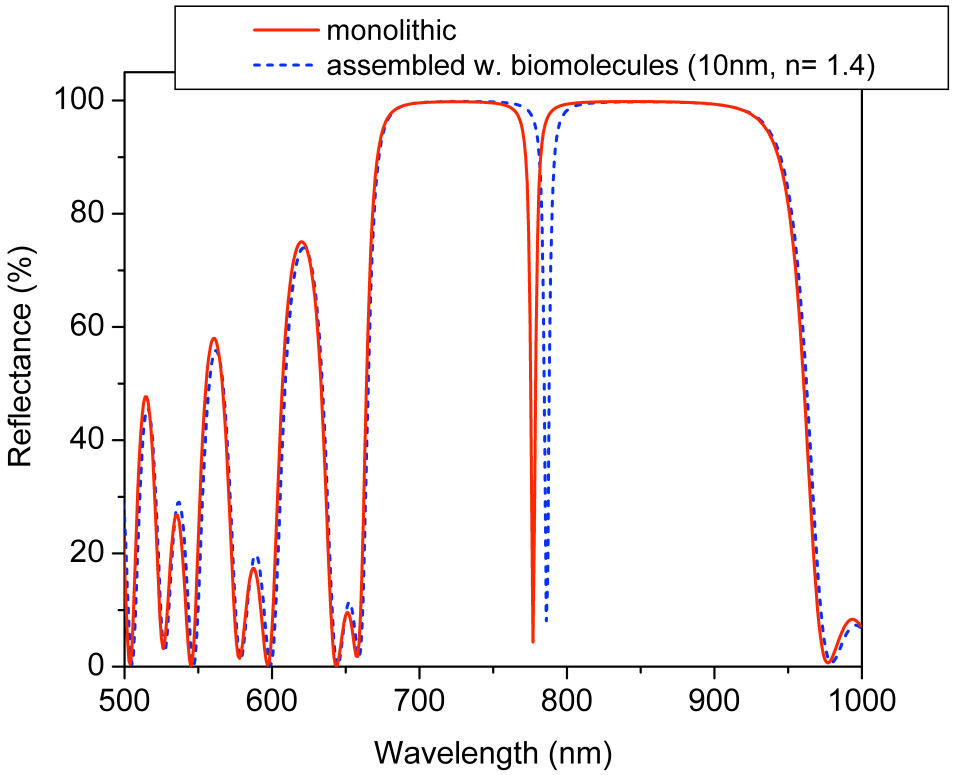


Supplementary Figure S1. *Top panel:* Reflectivity spectra of an as-prepared PSi photonic crystal measured in air (black line) and measured after a drop of ethanol (red line) was placed on top of the crystal. Ethanol has a low surface tension and can enter the hydrophobic pores of the as-prepared PSi crystal. Replacement of air (refractive index 1) inside the pores with ethanol (refractive index 1.36) results in a large red-shift of the reflectance spectrum. *Bottom panel:* Reflectivity spectra of the same as-prepared PSi photonic crystal in air (black line) and measured after a drop of water (red line) was placed on top of the crystal. The absence of a similarly large shift reveals that, in contrast to ethanol, water (refractive index 1.33) does not infiltrate the hydrophobic pores of the as-prepared PSi structure.



Supplementary Figure S2. Simulated reflectivity spectra of a monolithic PSi microcavity (solid red line) and a microcavity assembled from two Bragg mirrors via biorecognition (dotted blue line) using the approach shown in Figures 4 and 5. The spacer layer used in this simulation has a thickness of 252 nm and a refractive index of 1.39 at 740 nm. The bonding scheme shown in Figure 4a introduces a bonding layer of biomolecules at the centre of the spacer layer. Addition of this protein layer with a thickness of 10 nm and a refractive index of 1.4 in the simulation results in a shift of about 9 nm in the resonance peak position.