

Environmental pollutant ozone causes damage to lung surfactant
protein B (SP-B)

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Supporting information

The neutron and X-ray reflectivity data for the pure peptides at the air-water interface could be fitted to a number of models. In the paper results for fitting to a two-layer model are presented, with a portion of the peptide in a hydrated layer and a (hydrophobic) portion entirely above the interface. Using the X-ray reflectivity data for a monolayer of SMB as an example, below we compare the model with partial hydration for SMB before oxidation with a fit that was constrained to have the protein dehydrated and entirely above the aqueous surface.

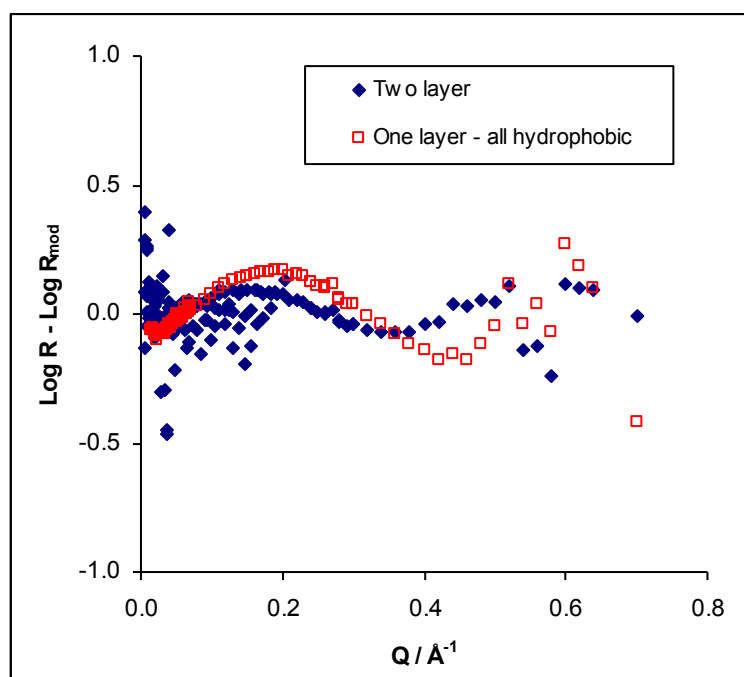


Figure S1. Plot of difference between the model calculations and observed X-ray reflectivity for SMB prior to oxidation.

The systematic deviation is notably larger for the model that constrained the protein to a dehydrated layer compare to the module which allowed a fraction of the peptide to be in a hydrated layer below the interface.

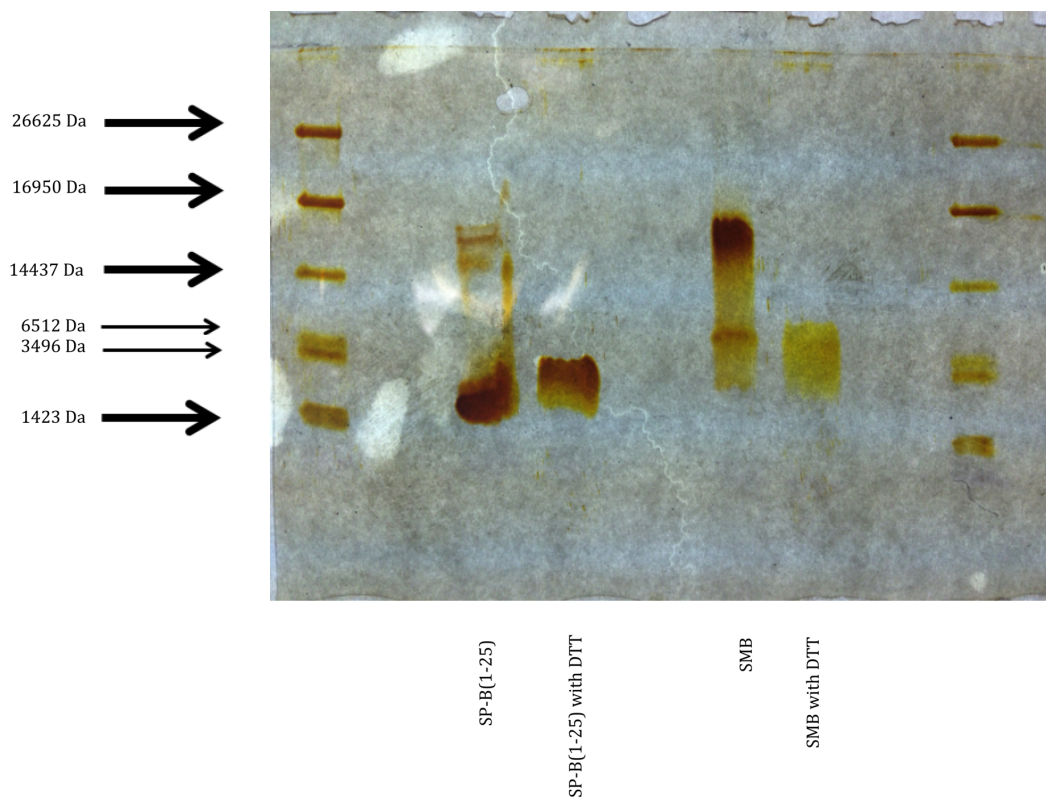


Figure S2. An SDS-PAGE gel of (left to right) SP-B(1-25), SP-B(1-25) which has been treated with the reducing agent DTT, SMB and SMB which has been treated with the reducing agent DTT. The far left and far right lanes contain a molecular weight ladder.

The SDS-PAGE gel of SP-B(1-25) and SMB shows bands at the expected positions for the peptide monomers (2.9 kDa for SP-B(1-25) and 4.8 kDa for SMB) but also bands at higher molecular weights. The higher molecular weight bands are not present when the samples are treated with the reductant dithiothreitol, DTT, consistent with them being due to oligomers of the peptides.

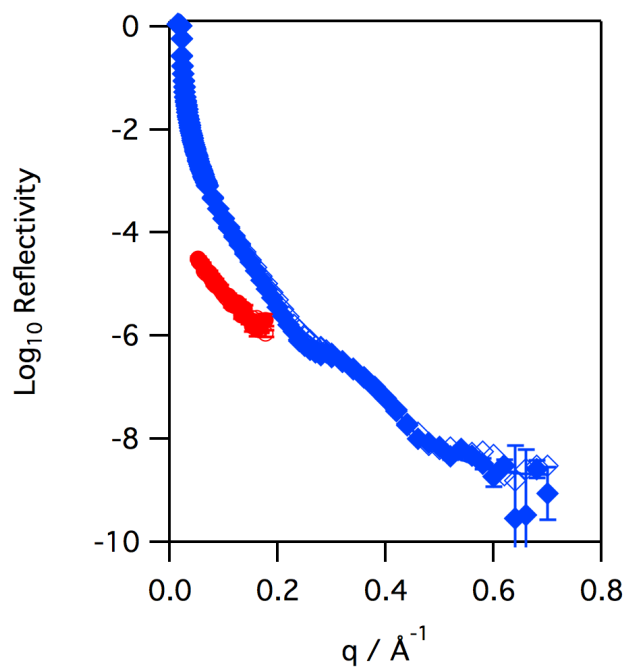


Figure S3 Reflectivity curves for monolayers of SMB and DPPG recorded at room temperature before and after ozone exposure. X-ray reflectivity profile for monolayer of SMB and ^1H -DPPG on H_2O buffer recorded at $21\text{ }^\circ\text{C}$ (blue diamonds) and neutron reflectivity profile for SMB and d_{62}DPPG on NRW buffer (red circles). The neutron reflectivity data has been offset by -1 on the y-axis for clarity. In each case filled symbols represent the reflectivity points before ozone exposure and the unfilled, of the same colour, represent the reflectivity points after ozone exposure. The initial surface pressure was $\sim 19\text{ mN m}^{-1}$ in both cases and dropped $< 2\text{ mN m}^{-1}$ during the time the film was exposed to ozone.