Supplementary Material

An ion-channel-containing model membrane: structural determination by magnetic contrast neutron reflectometry

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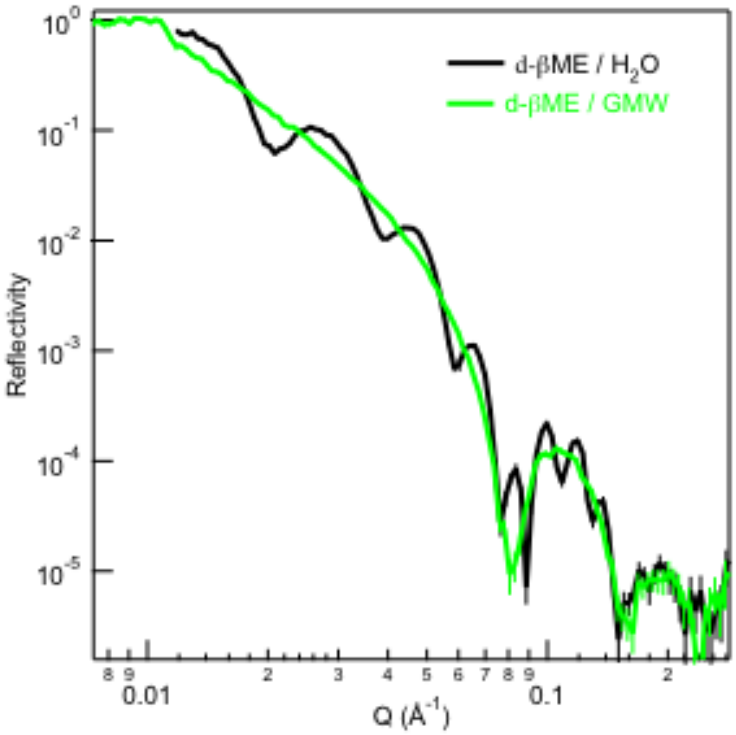

Figure S1. Reflectivity datasets, “up” spin state only for different βME contrast conditions. Data presented as lines between points to enable ready tracing of the fringes. The minima of the broad fringe (~ 0.08 and 0.15 Å) is due to the thickness of the magnetic reference layer. The critical edge it is at ~ 0.1 $Å^{-1}$ for gold matched water (GMW), green, buffer and is absent for H_2O buffer, black, where the change in nSLD from the silicon to the buffer is negative. The absence of small fringes in the GMW dataset is because the buffer contrast is matched to the gold, which approximates the nSLD of the d-βME. When the buffer is replaced with H_2O the small fringes are evident as the gold and d-βME layers are now visible.

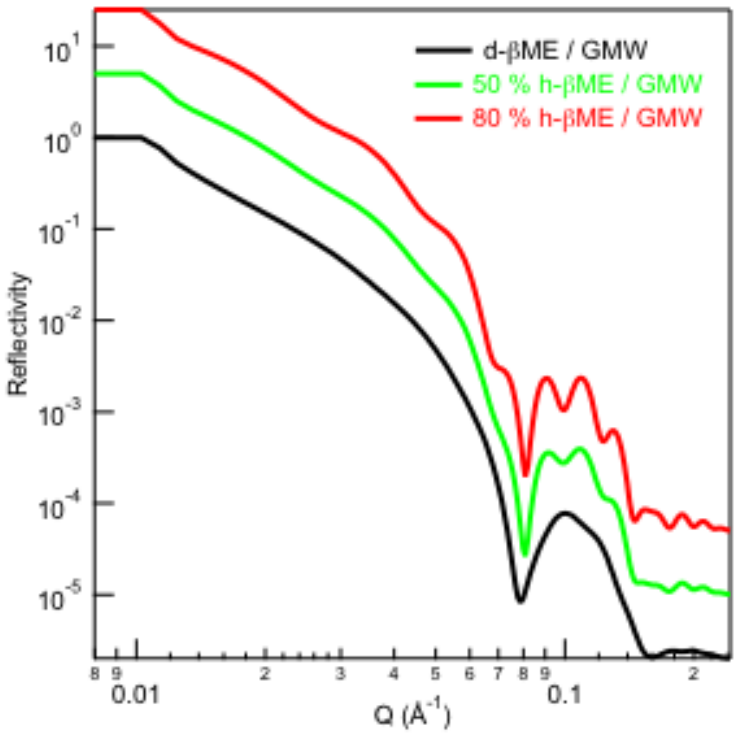

Figure S2. Simulated reflectivity datasets based upon the fits for data shown in Fig. S1 with simulations offset for clarity. Black – simulated version of d-βME with GMW subphase, note the asymmetry in shape of the fringe (maximum ~ 0.1) is because the d-βME does not exactly match the gold nSLD. Green simulation is for the same gold and magnetic layer structure and GMW buffer but with the surface covered with 50 % h-βME. Red simulation is with increased h-βME surface coverage. The simulations clearly illustrate the sensitivity of the data to the surface adsorption of very thin layers of hydrogenous material.