



Extended Data Figure 7 | Neutron scattering length density profiles of heavy-water-treated SNO. The scattering length density (SLD) profiles were fitted to the data shown in Fig. 2b for the SNO/SiO₂/Si films. The surface roughness is nearly unchanged after water treatment (Supplementary Information section 3). The profiles of water-treated and heavy-water-treated samples show similar film expansion. However, differences exist between the scattering length densities of D₂O- and H₂O-treated films. Because D⁺ has larger neutron scattering length than H⁺, the increase of the scattering length density demonstrates the intercalation of D⁺ from D₂O into the lattice after the treatment.