



**Extended Data Figure 3 | Topography and current map of water-treated SNO thin films.** **a**, Optical image of SNO after applying bias to a selected area, where colour change occurs. **b**, Current map of pristine area, where the current is in the nanoampere range. **c**, The corresponding surface topography of the pristine area. **d**, Current map of water-treated area, which is entirely dark compared with the pristine state (**b**). The current

after sensing is decreased to the picoampere range owing to proton uptake. **e**, The corresponding surface topography of SNO after sensing, where no evidence of corrosion was observed compared with the pristine state (**c**). Moreover, almost no variance is observed in the surface roughness of the thin film (Supplementary Information section 3). Scale bars are 0.5 μm.