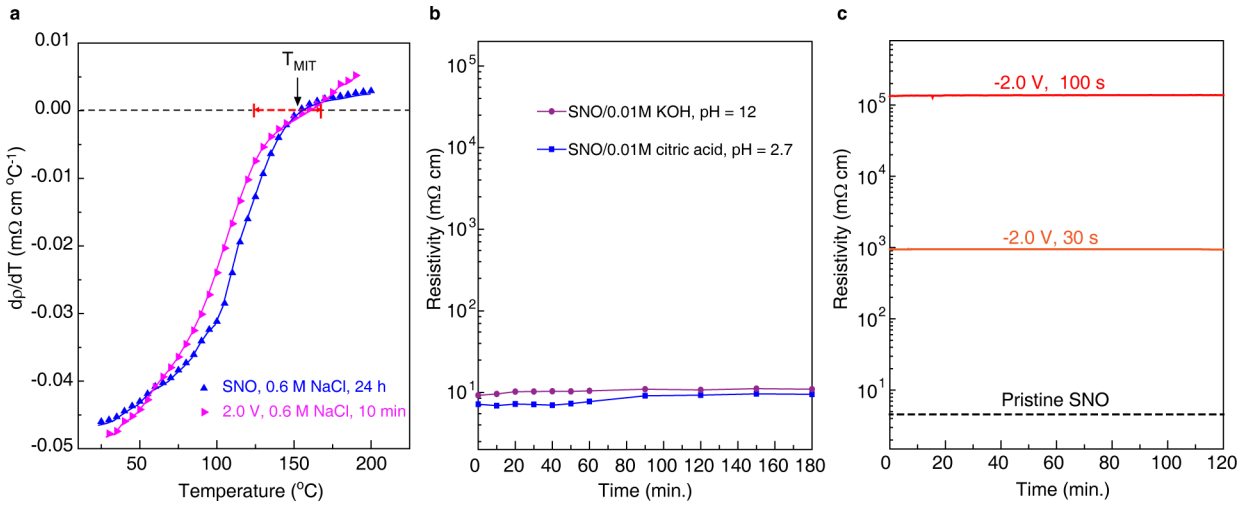

Extended Data Figure 1 | Electrical properties of water-treated SNO. a, Temperature derivative of the electrical resistivity of SNO after submersion in a 0.6 M NaCl aqueous solution for 24 h (blue curve). The insulator–metal transition temperature (T_{MIT}), where $d\rho/dT$ changes sign from negative to positive for submerged SNO is in the same range as reported in the literature[5,7,40,41]. The purple curve shows the temperature derivative of the electrical resistivity of SNO obtained after applying a reverse bias of 2.0 V for 10 min to a water-treated HSNO sample, where the metal–insulator transition recovers. **b**, Electrical resistivity of SNO after being submerged in solutions of 0.01 M KOH and 0.01 M citric acid. The electrical resistivity of SNO shows minimal variation over a wide range of pH values for 180 min. **c**, Non-volatile behaviour of SNO thin film after applying a bias of −2.0 V in a 0.6 M NaCl solution for various durations. The resistivity of SNO after sensing an electric potential remains unchanged for 120 min, which demonstrates its non-volatile nature, in contrast to the surface electrostatic field effect of electric double-layer transistors.