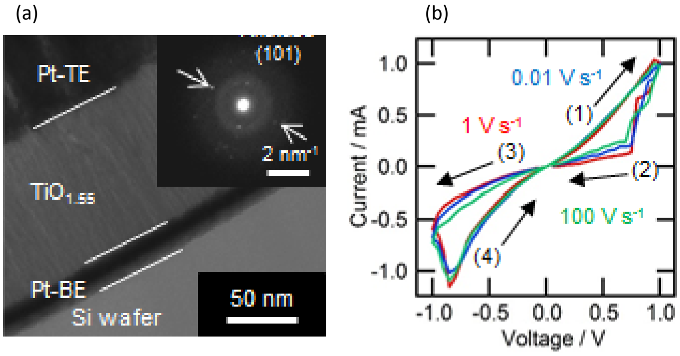

Fig. S1 (a) Cross-section TEM image and ED pattern of rutile-type TiO_x thin films. (b) *I*-*V* characteristics of 100 nm-thick TiO_x thin films, measured at a voltage sweep rate of 100 V s^{-1} (–), 1 V s^{-1} (–) and 0.01 V s^{-1} (–).