

In this study inorganic-solid-state electrolyte tantalum oxide (Ta<sub>2</sub>O<sub>5</sub>) thin films were deposited by reactive RF magnetron sputtering to improve the leakage and evaporation of gel electrolytes in solid state electrochromic devices. The results indicate that the Ta<sub>2</sub>O<sub>5</sub> thin films were amorphous, porous with and highly transparent. For the device construction Ta<sub>2</sub>O<sub>5</sub> film deposited on a WO<sub>3</sub>-TiO<sub>2</sub>/ITO/glass substrate and the all-solid-state electrochromic device was fabricated as a dual type of glass/ITO/WO<sub>3</sub>-TiO<sub>2</sub>/Ta<sub>2</sub>O<sub>5</sub>/V<sub>2</sub>O<sub>5</sub>/ITO/glass. The optical transmittance difference of the device changed with an applied voltage of  $\pm 3$  V.