Titanium based functional thin films were prepared by a sputtering deposition method using a metal powder target, and electron density and temperature of the processing plasma were investigated [1]. Electron density of the plasma, measured by probe method, using powder target was higher than that of bulk target. Deposition rate using powder target was also higher than that of bulk target as shown in Fig. 1. These results may be due to net-cathode area of powder target was wider than that of bulk target. XPS, XRD measurements, AFM images of the prepared films using the Ti powder target appeared to be nearly same properties as those of films prepared using a Ti bulk target, and the prepared films are oxide. These results suggest that TiO₂ thin films can be prepared using a Ti powder target and that the quality is almost the same as those of compared with the films prepared using a Ti bulk target.