

Abstract

METHOD FOR FORMING TiON FILM

5 A TiON film forming method is provided. A cycle of forming a unit TiN film at a predetermined processing temperature by alternately supplying a Ti-containing gas and a nitriding gas into the processing chamber accommodating a target substrate and oxidizing the unit TiN film by
10 supplying an oxidizing agent into the processing chamber is repeated multiple times. In an initial stage of the film formation, a cycle of repeating the alternate supply of the Ti-containing gas and the nitriding gas X1 times and supplying the oxidizing agent is repeated Y1 times. In a
15 later stage of the film formation, a cycle of repeating the alternate supply of the Ti-containing gas and the nitriding gas X2 times and supplying the oxidizing agent is repeated Y2 times until a desired film thickness is obtained. The number of repetition X1 is set to be greater than the number
20 of repetition X2.

FIG. 3