Abstract of the Disclosure

A method of film processing comprises forming an integrated titanium/titanium nitride (Ti/TiN) film structure having an intermediate layer. The intermediate layer comprises species containing Si, and preferably containing Si and Ti, such as titanium silicide ($TiSi_x$), or $TiSi_xO_y$, among others. The intermediate layer protects the underlying Ti film against chemical attack during subsequent TiN deposition using a titanium tetrachloride ($TiCl_4$)-based chemistry. The method allows reliable Ti/TiN film integration to be achieved with excellent TiN step coverage. For example, the film structure can be used as an effective barrier layer in integrated circuit fabrication.

Fig. 1

This Sheet Has Been Replaced

