METHOD FOR DEPOSITING A DIFFUSION BARRIER

Abstract of the Disclosure

A refractory Metal Nitride and a refractory metal Silicon Nitride layer (64) can be formed using metal organic chemical deposition. More specifically, tantalum nitride (TaN) (64) can be formed by a Chemical Vapor Deposition (CVD) using Ethyltrikis (Diethylamido) Tantalum (ETDET) and ammonia (NH_3). By the inclusion of silane (SiH_4), tantalum silicon nitride (TaSiN) (64) layer can also be formed. Both of these layers can be formed at wafer temperatures lower than approximately 400° C with relatively small amounts of carbon (C) within the film. Therefore, the embodiments of the present invention can be used to form tantalum nitride (TaN) or tantalum silicon nitride (TaSiN) (64) that is relatively conformal and has reasonably good diffusion barrier properties.

FIG. 3 to accompany abstract.