METHOD FOR PREVENTING TITANIUM LIFTING DURING AND AFTER METAL ETCHING

ABSTRACT

A process for forming metal composites, using a titanium underlay as part of the composite, with reduced risk of titanium adhesion loss or lifting, has been developed. Several solutions, resulting in protective layers being formed on the exposed titanium sidewall, have been shown. One solution features the addition of nitrogen, as part of reactive ion etching chemistry, during the patterning of the underlying titanium layer. The resulting titanium nitride formation, on the exposed titanium sidewall, protects against subsequent processing steps that may degrade the adhesion of titanium to an underlying material. A second solution describes the formation of a titanium oxide film on the exposed titanium sidewall. This formation occurs during a photoresist plasma strip, using an oxygen - steam ambient. The titanium oxide film again results in protection of the titanium interface, during subsequent processing steps. (Fig. 6)