Abstract

COMPOSITIONS AND METHODS FOR THE SELECTIVE REMOVAL OF SILICON NITRIDE

Compositions useful for the selective removal of silicon nitride materials relative to poly-silicon, silicon oxide materials and/or silicide materials from a microelectronic device having same thereon. The removal compositions include fluorosilicic acid, silicic acid, and at least one organic solvent. Typical process temperatures are less than about 100°C and typical selectivity for nitride versus oxide etch is about 200:1 to about 2000:1. Under typical process conditions, nickel-based silicides as well as titanium and tantalum nitrides are largely unaffected, and polysilicon etch rates are less than about 1 Å min^{-1}.

Figure 1