ABSTRACT

HIGH-K MOM OF THE INVENTION

A method for fabricating a metal-oxide-metal capacitor is described. A first insulating layer is provided overlying a semiconductor substrate. A barrier metal layer and a first metal layer are deposited over the insulating layer. A titanium layer is deposited overlying the first metal layer. The titanium layer is exposed to an oxidizing plasma while simultaneously a portion of the titanium layer where the metal-oxide-metal capacitor is to be formed is exposed to light whereby the portion of the titanium layer exposed to light reacts with the oxidizing plasma to form titanium oxide. Thereafter, the titanium layer is removed, leaving the titanium oxide layer where the metal-oxide-metal capacitor is to be formed. A second metal layer is deposited overlying the first metal layer and the titanium oxide layer. The second metal layer, titanium oxide layer, and first metal layer are patterned to form a metal-oxide-metal capacitor wherein the second metal layer forms an upper plate electrode, the titanium oxide layer forms a capacitor dielectric, and the first metal layer forms a bottom plate electrode of the MOM capacitor.

FIG 1