ABSTRACT OF THE DISCLOSURE

METHOD OF PREPARING CRYSTALLINE ALKALINE EARTH METAL OXIDES ON A Si SUBSTRATE

A method of preparing crystalline alkaline earth metal oxides on a Si substrate wherein a Si substrate with amorphous silicon dioxide on a surface is provided. The substrate is heated to a temperature in a range of 700 ^{o}C to 800 ^{o}C and exposed to a beam of alkaline earth metal(s) in a molecular beam epitaxy chamber at a pressure within approximately a 10^{-9}-10^{-10} Torr range. During the molecular beam epitaxy the surface is monitored by RHEED technique to determine a conversion of the amorphous silicon dioxide to a crystalline alkaline earth metal oxide. Once the alkaline earth metal oxide is formed, additional layers of material, e.g. additional thickness of an alkaline earth metal oxide, single crystal ferroelectrics or high dielectric constant oxides on silicon for non-volatile and high density memory device applications.

Fig. 3 accompanies this abstract.