Study of Silicon Dioxide Grown onto SiGe Film by Using Liquid Phase Deposition

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ABSTRACT

Silicon dioxide layer has been grown onto SiGe thin films by using liquid-phase-deposition (LPD) technique for the first time. In this work, different growth temperature and concentration of boric acid (H3BO3) were taken to investigate the performance of silicon dioxide. In material properties, The AFM, EDS, AES, and ESCA were measured to analyze the flatness, composition, and chemical bonding of silicon dioxide. In addition, silicon dioxide annealed was done at 4000C~6000C for 30 second. We found that annealing can harden the silicon dioxide and decrease leakage current. With slow deposition rate, the flatness of silicon dioxide is roughness and thus increases the leakage current of metal-oxide-semiconductor (MOS) devices but enhance optical performance.

Keywords : SiGe, liquid-phase-deposition, annealing, MOS

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