

활성산소종의 확산에 의한 실리콘 산화막 형성

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The oxidation of silicon is one of the most important steps in the fabrication of silicon-based integrated circuits and has traditionally required high temperatures, typically above about 1000°C. However, relatively low-temperature oxidation of silicon would be highly desirable to produce the circuit devices having ultra-high density. To overcome thermal budget for silicon oxidation process, recently, several novel methods have been considered and revealed. In this study, several methods, such as plasma, rapid thermal process (RTP) and gas-phase diffusion of active oxygen species, for silicon oxide growth at the relatively low temperature have been investigated. Among the methods, the oxidation by active oxygen species from photo-catalyst surface may be classified as a novel method for low temperature oxidation process. Titanate was used as a mediator for the generation of active oxygen species for silicon oxidation during ultraviolet (UV) exposure.