

Cu ECMP 공정에 사용되는 전해액의 최적화

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Optimization of Electrolytes on Cu ECMP Process

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Abstract : In semiconductor devices, Cu has been used for the formation of multilevel metal interconnects by the damascene technique. Also lower dielectric constant materials is needed for the below 65 nm technology node. However, the low-k materials has porous structure and they can be easily damaged by high down pressure during conventional CMP. Also, Cu surface are vulnerable to have surface scratches by abrasive particles in CMP slurry. In order to overcome these technical difficulties in CMP, electro-chemical mechanical planarization (ECMP) has been introduced. ECMP uses abrasive free electrolyte, soft pad and low down-force. Especially, electrolyte is an important process factor in ECMP. The purpose of this study was to characterize KOH and KNO₃ based electrolytes on electro-chemical mechanical planarization. Also, the effect of additives such as an organic acid and oxidizer on ECMP behavior was investigated. The removal rate and static etch rate were measured to evaluate the effect of electro chemical reaction.

Key Words : ECMP, KOH, KNO₃