

## MOCVD법에 의해 나노급 구조 안에 증착된 InSbTe 상변화 재료

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### InSbTe phase change materials deposited in nano scaled structures by metal organic chemical vapor deposition

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**Abstract** : To date, chalcogenide alloy such as  $\text{Ge}_2\text{Sb}_2\text{Te}_3$ (GST) have not only been rigorously studied for use in Phase Change Random Access Memory(PRAM) applications, but also temperature gap to make different states is not enough to apply to device between amorphous and crystalline state.

In this study, we have investigated a new system of phase change media based on the In-Sb-Te(IST) ternary alloys for PRAM. IST chalcogenide thin films were prepared in trench structure (aspect ratio 5:1 of length=500nm, width=100nm) using Tri methyl Indium ( $\text{In}(\text{CH}_3)_3$ ), Sb(iPr)<sub>3</sub> ( $\text{Sb}(\text{C}_3\text{H}_7)_3$ ) and Te(iPr)<sub>2</sub> ( $\text{Te}(\text{C}_3\text{H}_7)_2$ ) precursors.

MOCVD process is very powerful system to deposit in ultra integrated device like 100nm scaled trench structure. And IST materials for PRAM can be grown at low deposition temperature below 200°C in comparison with GST materials. Although Melting temperature of IST materials was ~ 630°C like GST, Crystalline temperature of them was ~ 290°C; one of GST were 130°C.

In-Sb-Te materials will be good candidate materials for PRAM applications. And MOCVD system is powerful for applying ultra scale integration cell.

**Key Words** : In-Sb-Te chalcogenide materials, MOCVD, Phase change memory, trench structure.