前瞻異質材料金屬有機化學氣相沉積系統 — III-V MOCVD *標準製程

NARLabs

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Materials Systems

GaAs-based materials system

- i-GaAs
- n-GaAs
- p-GaAs
- i-$Al_xGa_{1-x}As$ ($x \leq 0.2$)
- i-$In_xGa_{1-x}As$ ($x \leq 0.2$)

InP-matched materials system

- i-$In_xGa_{1-x}As$ ($x \cong 0.5$)
- n-$In_xGa_{1-x}As$ ($x \cong 0.5$)
- p-$In_xGa_{1-x}As$ ($x \cong 0.5$)
- i-$In_xAl_{1-x}As$ ($x \cong 0.5$)

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Substrate: S.I. GaAs

Materials	Growth Rate (μm/hr)	Concentration (cm-3)	Remark
i-GaAs	1.2 μm/hr	about 1E16	p-type
n-GaAs	1.2 μm/hr	up to 3E18	Dopant=Si
p-GaAs	1.2 μm/hr	up to 3E18	Dopant=Zn
i-$Al_xGa_{1-x}As$ ($x \leq 0.2$)	1.5 μm/hr	Un-intentionally doped	e.g. x=0.188
i-$In_xGa_{1-x}As$ ($x \leq 0.2$)	1.5 μm/hr	Un-intentionally doped	e.g. x=0.182

Substrate: S.I. InP

Materials	Growth Rate (μm/hr)	Concentration (cm-3)	Remark
i-$In_xGa_{1-x}As$ ($x \cong 0.5$)	0.6 μm/hr	about 5E16	n-type
n-$In_xGa_{1-x}As$ ($x \cong 0.5$)	0.6 μm/hr	up to 1E19	Dopant=Si
p-$In_xGa_{1-x}As$ ($x \cong 0.5$)	0.6 μm/hr	up to 1E19	Dopant=Zn
i-$In_xAl_{1-x}As$ ($x \cong 0.5$)	0.6 μm/hr	Un-intentionally doped	-