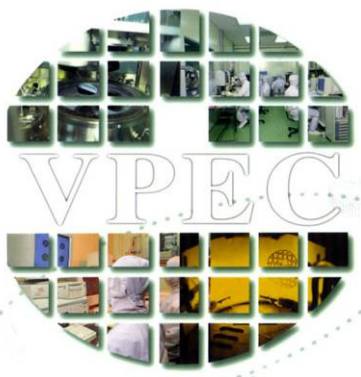




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# ***Company Profile***

***World-class leading edge with MOCVD***

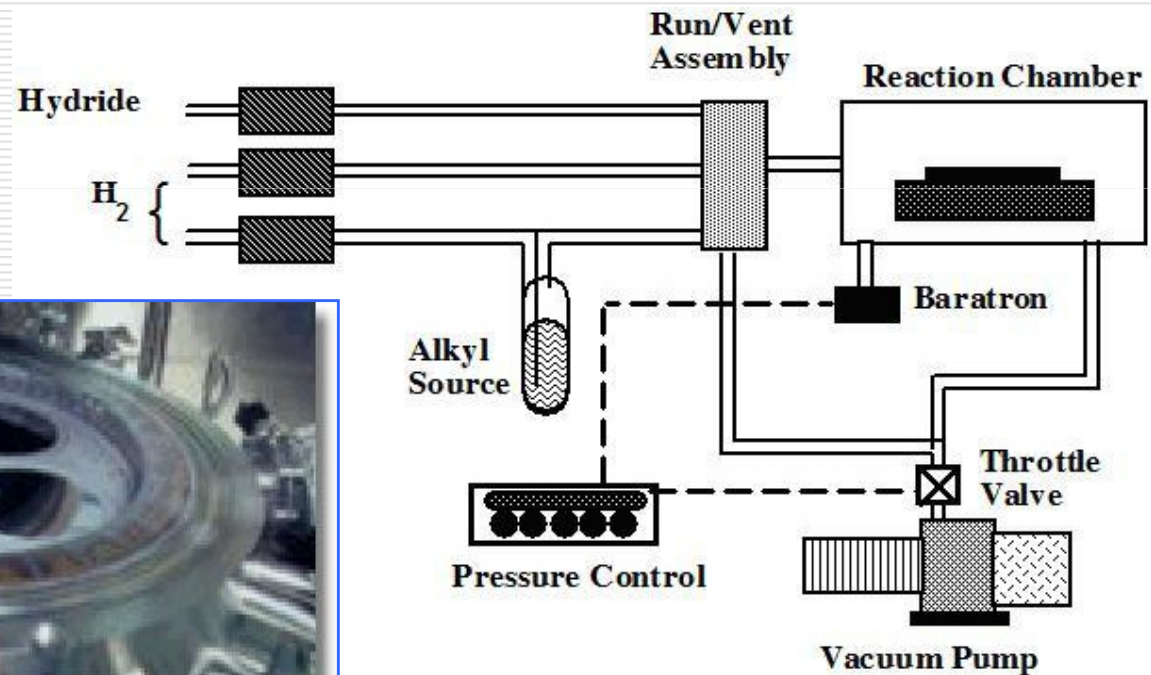




# Core Technology

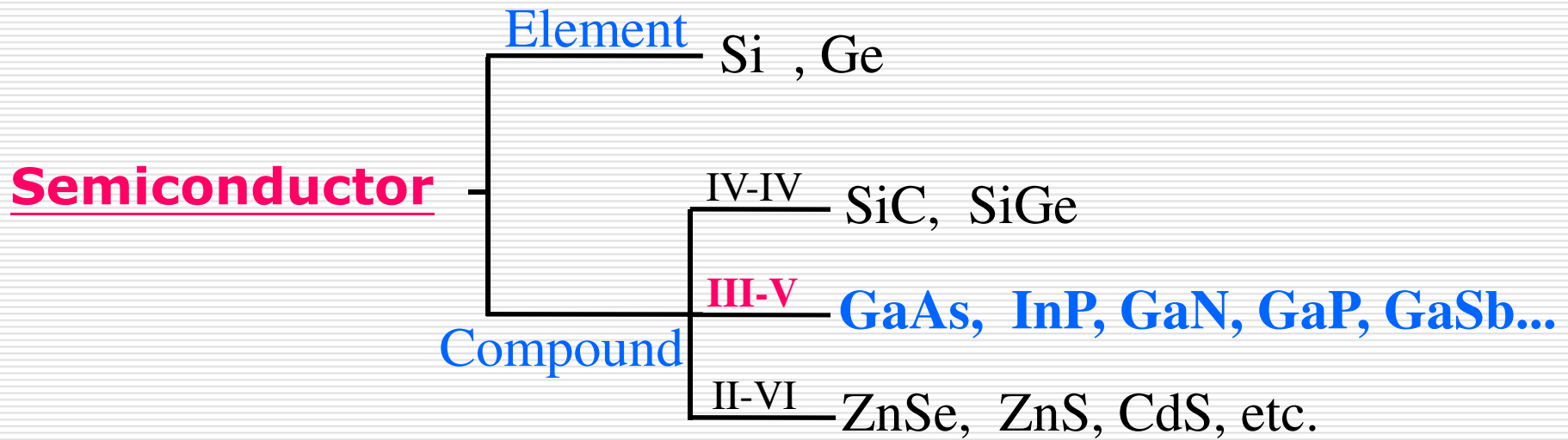
## MOCVD (有機金屬氣相沉積法)

- Metal Organic Chemical Vapor Deposition





# Semiconductor (by Material)



Period	Column II	III	IV	V	VI
2	Be 鈹 Beryllium	B 硼 Boron	C 碳 Carbon	N 氮 Nitrogen	O 氧 Oxygen
3	Mg 鎂 Magnesium	Al 鋁 Aluminum	Si 矽 Silicon	P 磷 Phosphorus	S 硫 Sulfur
4	Zn 鋅 Zinc	Ga 鎵 Gallium	Ge 鍺 Germanium	As 砷 Arsenic	Se 硒 Selenium
5	Cd 鎘 Cadmium	In 銦 Indium	Sn 錫 Tin	Sb 銻 Antimony	Te 碲 Tellurium
6	Hg 汞 Mercury	Tl 鉍 Thallium	Pb 鉛 Lead		

二元化合物 Binary : GaAs, InP, GaP, GaN, etc.

三元化合物 Ternary : InGaAs, InGaP, AlGaAs, etc.

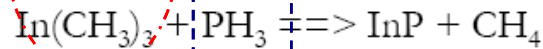
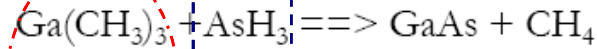
四元化合物 Quaternary : AlGaInP, InGaAsP, etc.

五元化合物 Pentanary : AlGaInAsN, etc.



# Chemical Reaction During Epitaxy

化學反應式：

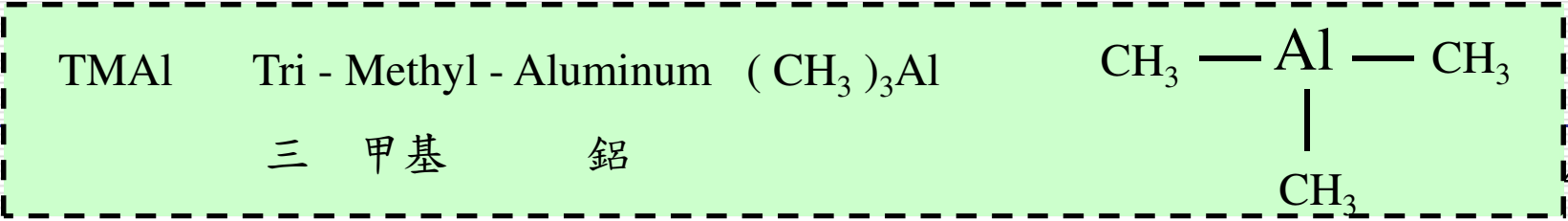


主要原物料：

**MO Source** + **Hydride** + Carrier Gas : **H2**

- TEAl : Tri-ethyl-Aluminum (  $\text{C}_2\text{H}_5$  )<sub>3</sub>Al
- TMGa : Tri-Methyl-Gallium (  $\text{CH}_3$  )<sub>3</sub> Ga
- TMIn : Tri-Methyl-Indium (  $\text{CH}_3$  )<sub>3</sub>In
- DETe : Di-ethyl-Tellurium (  $\text{C}_2\text{H}_5$  )<sub>2</sub>Te
- DEZn : Di-ethyl-Zinc (  $\text{C}_2\text{H}_5$  )<sub>2</sub>Zn
- CP<sub>2</sub>Mg : Bis (cyclo-penta-dienyl)-Magnesium 環戊二烯鎂

- AsH<sub>3</sub> : Arsine
- PH<sub>3</sub> : Phosphine
- SiH<sub>4</sub> : Silane
- Si<sub>2</sub>H<sub>6</sub> : Disilane
- H<sub>2</sub>Se : Hydrogen Selenide
- CBr<sub>4</sub> : Carbon Tetrabromide





# *Advantages of Compound Semiconductor*

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1. High Electron Mobility 高電子移動速率 (5.7x higher than CMOS)
2. High Frequency Response 高頻率響應
3. Wide Band Width 寬幅之頻寬
4. High Linearity 高線性度
5. High Power 高功率
6. Alternative Choice of Material 材料選擇多元性
7. 抗輻射

適用於無線通訊、光通訊、雷射



# GaAs in Wireless Communication Supply Chain

Sumitomo, Freiberg, AXT

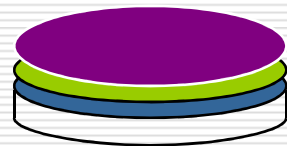
4~6 "GaAs Substrate



GaAs Epi- Wafer  
磊晶片

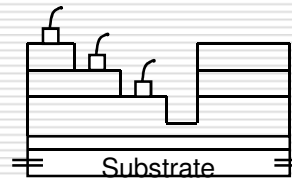
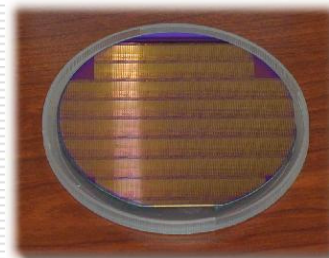


MOCVD Reactor



IDM : Qorvo, Avago,  
Skyworks

Microelectronics  
IC Process

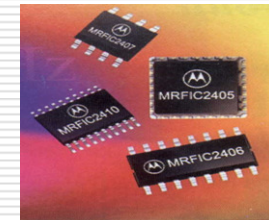


Foundry :

WIN, AWSC,  
GCS



Wireless  
Communication



IC Package & Testing



# 2016 ~ 2020 H1 Financial Result

	2020 H1	%	2019	%	2018	%	2017	%	2016	%
Revenue	1,243,380	100.00%	2,530,909	100.00%	2,062,120	100.00%	2,137,109	100.00%	2,182,825	100.00%
Gross margin	528,690	42.52%	1,034,272	40.87%	774,359	37.55%	743,467	34.79%	809,059	37.06%
Operating Profit	325,345	26.17%	648,983	25.64%	463,906	22.50%	515,093	24.10%	588,072	26.94%
Financial Income	-1,737	-0.14%	-20,380	-0.81%	25,273	1.23%	-35,375	-1.66%	-29,431	-1.35%
Tax	-49,662	-3.99%	-114,278	-4.52%	-92,009	-4.46%	-85,366	-3.99%	-91,534	-4.19%
Net income	273,946	22.03%	514,325	20.32%	397,170	19.26%	394,352	18.45%	467,107	21.40%
EPS	1.48		2.79		2.16		2.15		2.12	