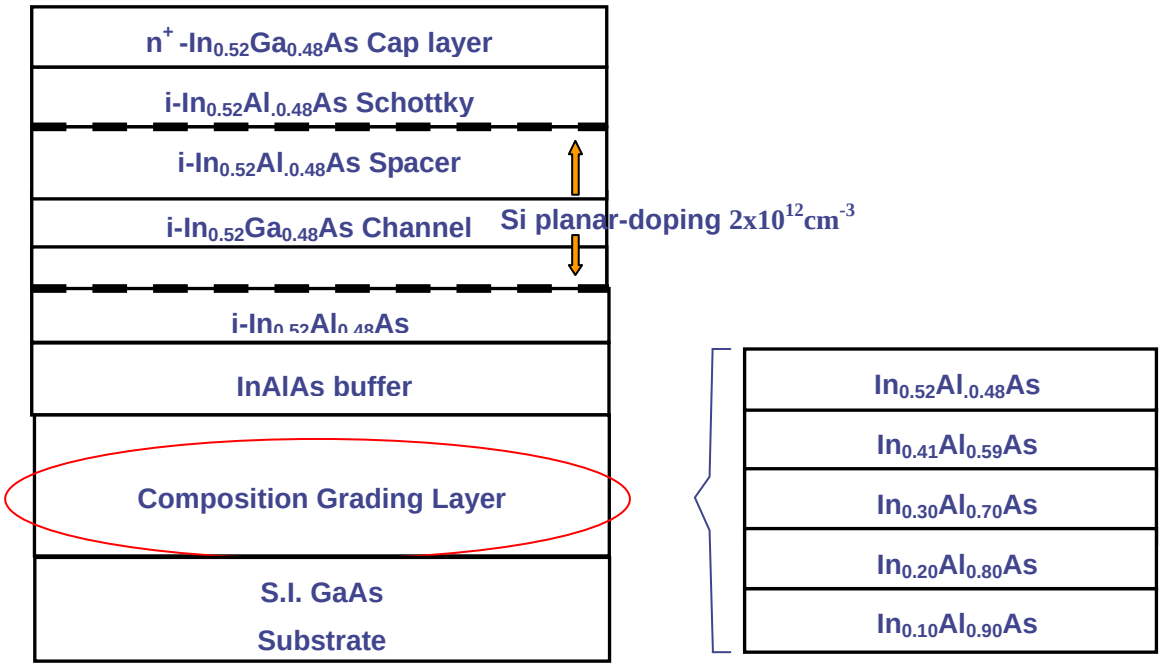


Fig. 3.1 Cross-section structure of the MHEMT

R total v.s. TLM space

SPACE(mm)	3	5	10	20	36
R (ohm)	7.9	11.18	19.9	36.2	63.4
R (ohm)	8	11.33	20.27	36.1	63.73

Rc, Rsh and ρ c

Rc (Ω)=	1.49 E+00
Rsh (Ω/[])=	1.25 E+02
ρ c (Ω-cm^2)=	**9.0 E-07**

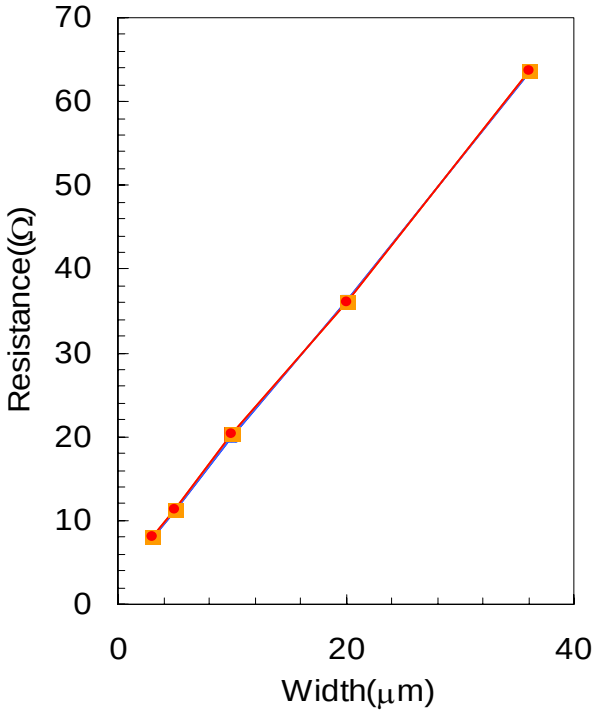


Fig. 3.2 Ohmic contact resistance

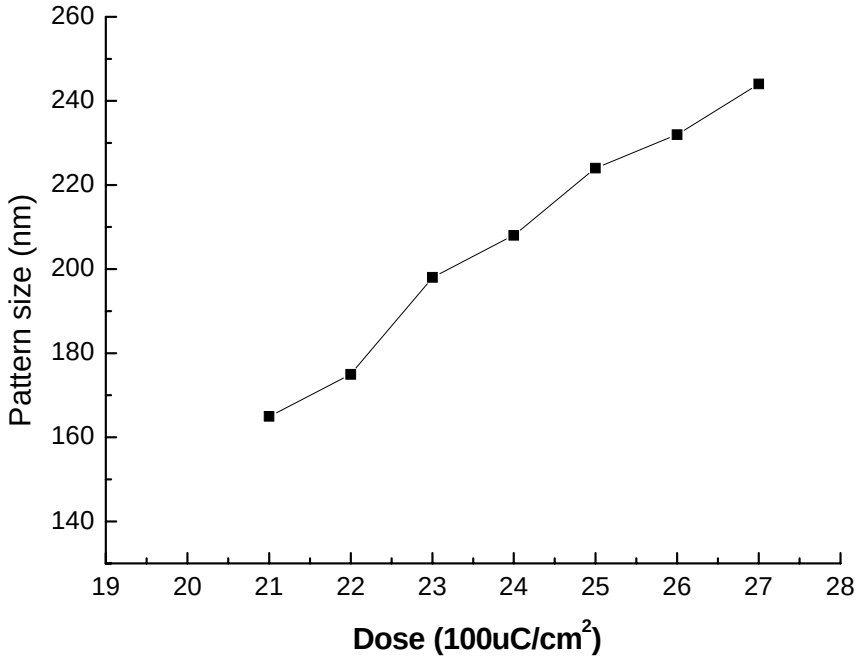


Fig. 3.3 The dose dependence of the gate foot size of a single PMMA resist layer after development

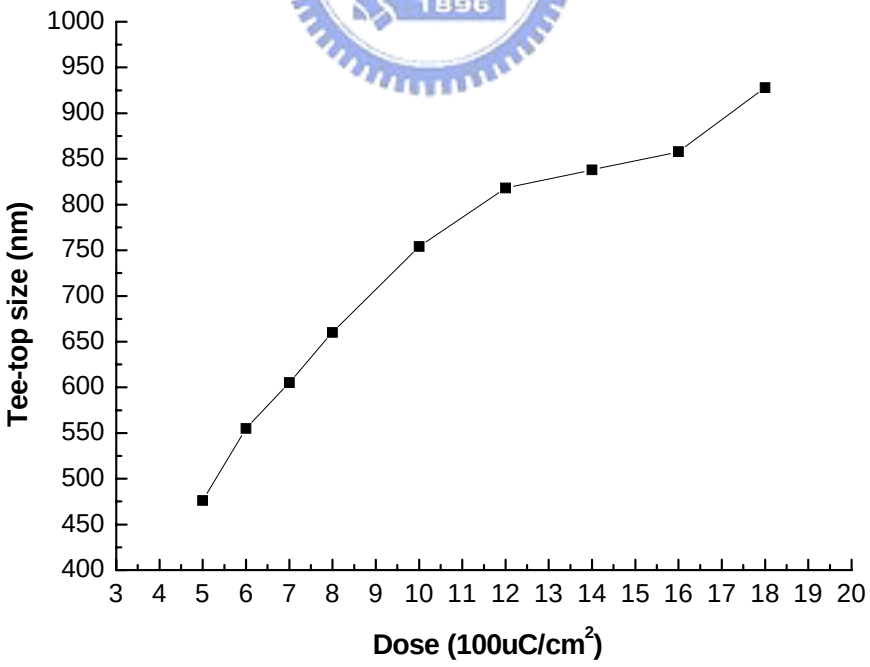
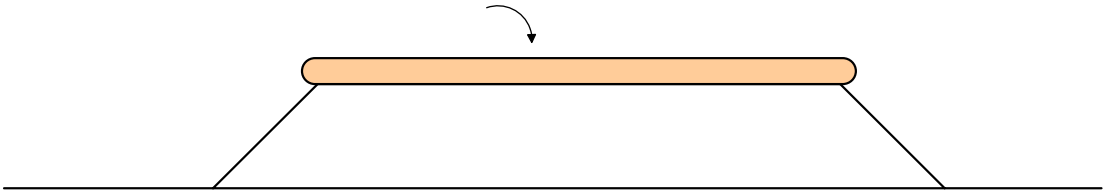
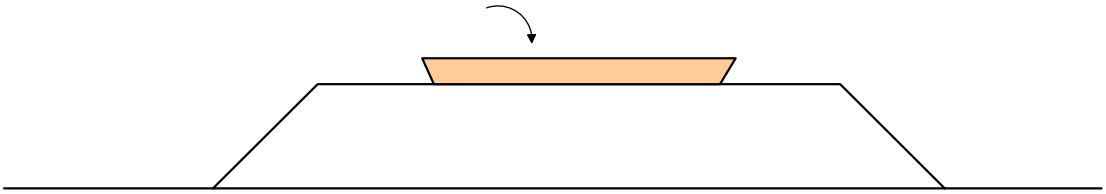


Fig. 3.4 The dose dependence of the gate head size of a bi-layer (Copolymer/PMMA) resist layer after development

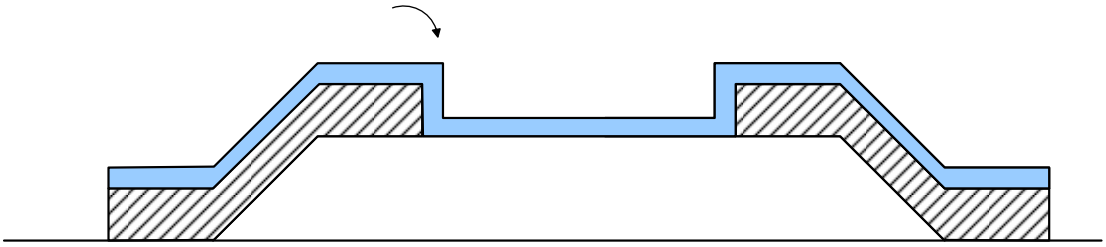


(a) Mesa isolation



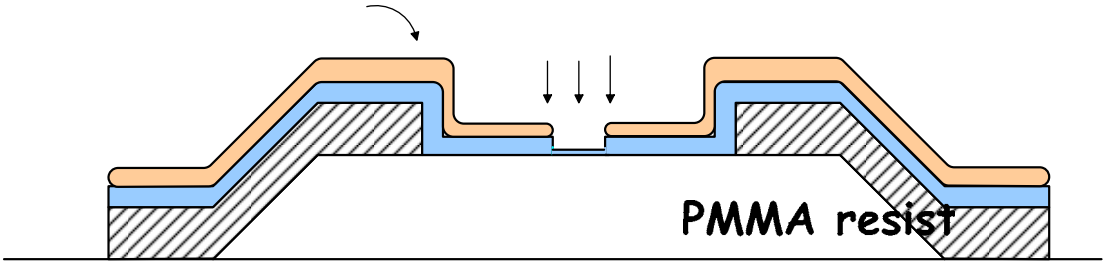
(b) Ohmic pattern

(c) Ohmic metal

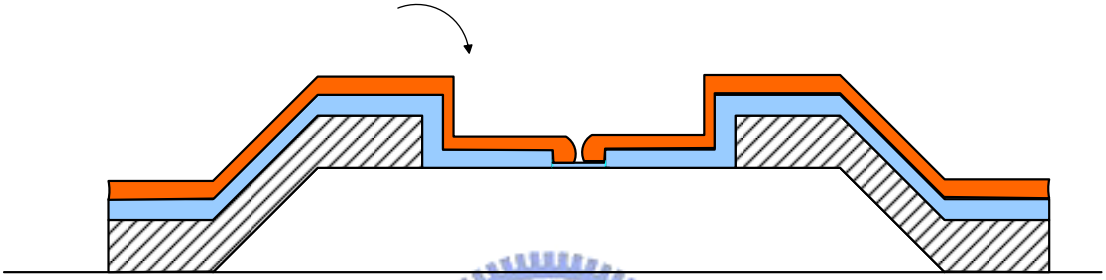


(d) 1st SiN_x deposited

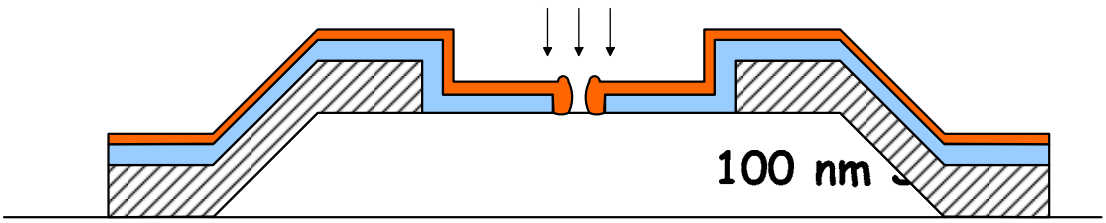
Fig. 3.5 Process flow of sidewall gate fabrication (1)



(e) Pattern transfer on SiN_x

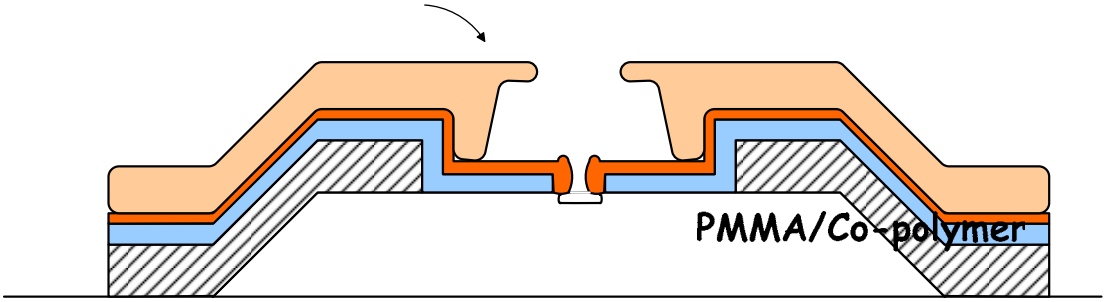


(f) SiO_2 re-deposition

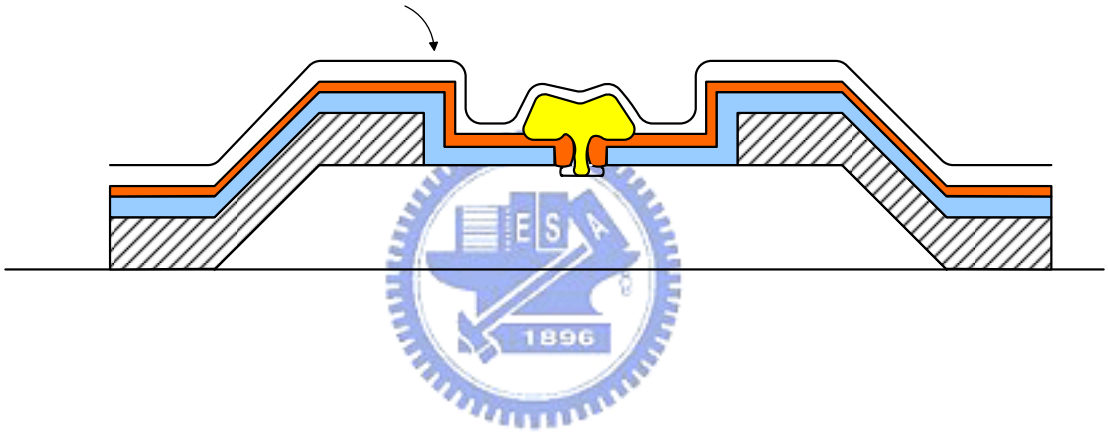


(g) Gate foot definition

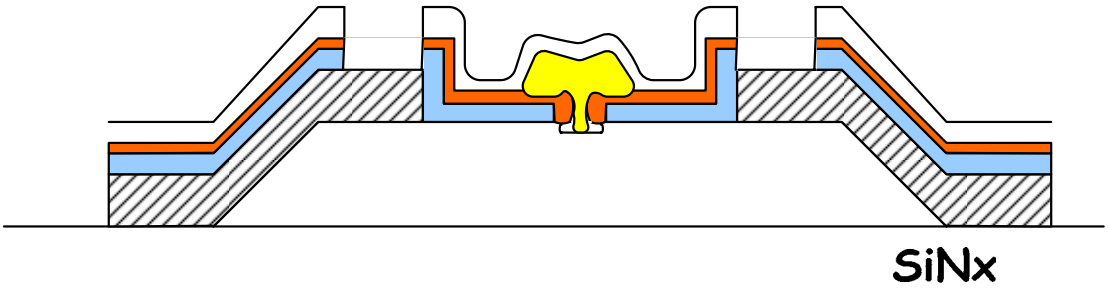
Fig. 3.5 Process flow of sidewall gate fabrication (2)



(h) Gate head definition & recess

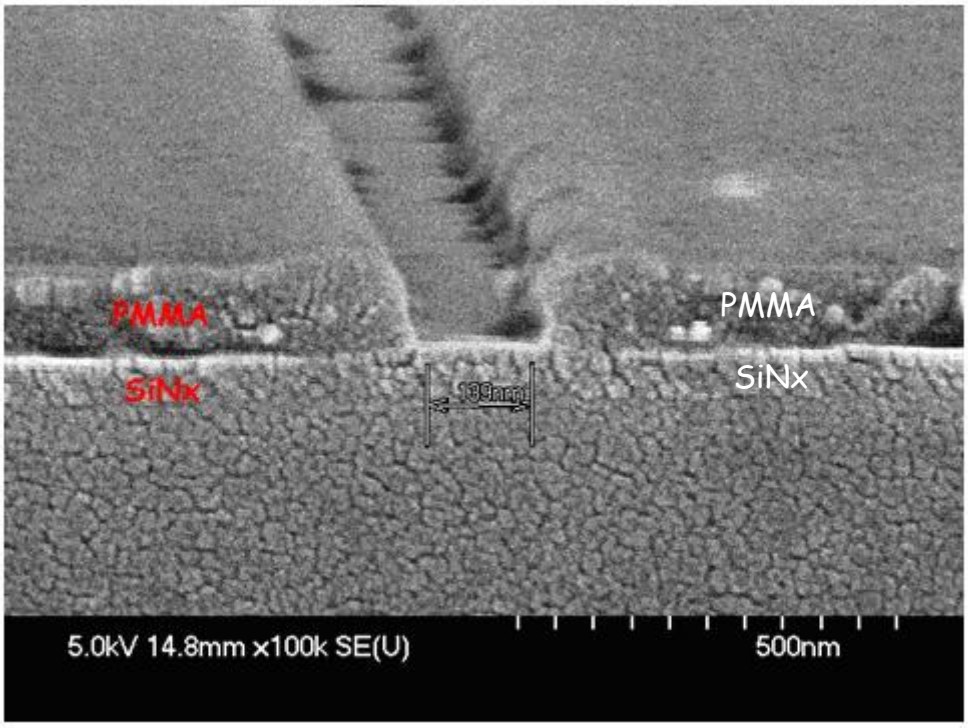


(i) Gate metallization & passivation

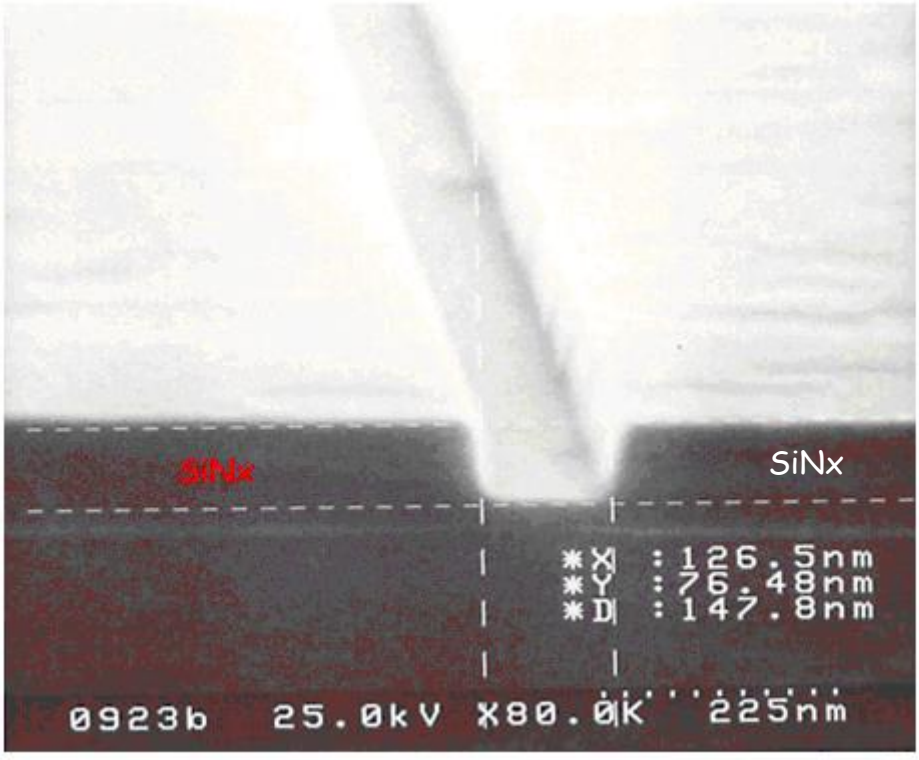


(j) Nitride via

Fig. 3.5 process flow of sidewall gate fabrication (3)



(a) Gate foot definition



(b) Pattern transfer on SiN_x

Fig. 3.6 SEM photos of the sidewall gate process (1)