Week 25 report

Planning

	Mon 19.06	Tue 20.06	Wed 21.06	Thur 22.06	Fri 23.06
Planned	-	-	-	-	-
Done	Sample dicing and observation	Leak test on CERN buried channels	Leak test on CERN buried channels Conference at SHH	Pressure test on CERN buried channels Group meeting	Observation of cross section

	Mon 26.06	Tue 27.06	Wed 28.06	Thur 29.06	Fri 30.06	
Planned	Meeting at	Observation of	Observation of	Report	Report writing	
	CERN with	exploded	exploded	writing	Hand in draft	
	Diego and	samples	samples		version	
	Alessandro	Report writing	Report writing			

EPFL

Leak test and pressure test was done on the samples fabricated at CMi. Results are given in Table 1. It can be seen that Wf220 is more resistant than the other wafers. The oxide layer seems to bring more resistance to the samples, either by closing more efficiently the trench or by adding 2um to the cover thickness. It can however bring some intrinsic stress and make the cover undulate. It also reduces the channel's width from 2um. Further observations of broken samples and analysis will follow.

Single/ Ramified	ID	Туре	N	S⊥ [μm]	W _{CERN} [μm]	FBK equiv alent	W _{FBK} [μm]	Wf214	Wf215	Wf218	Wf219	Wf220	Wf221	
								Oxide		Oxide	Mask	Mask, Oxide		
S, W=100	F1	L	5	25	103	Yes	104	Mechanically unstable						
S, W=200	E1	L	9	25	203	Yes	204	Mechanically unstable						
	F2	T12	9	25	212	Yes	212	191.7	-	-	-	250.8	151.3	
	D2	T24	5	50	224	Yes	224	132.6	-	-	-	140.4	100.5	
	B4	T200	1	1	200	No	-	-	-	-	-	196	110.1	
	A2	T200	1	-	200	No	-	-	37.2	-	96.2	60.8	97.8	
S, W=350	B2	T24	11	33	354	No	-	-	-	-	-	51.8	-	
	В3	T12	17	21	348	No	-	43.8	-	-	17.7	54.4	27.8	
** 330	А3	T350	1	-	350	No	-	-	-	-	-	66.7	50.7	
S, W=400	E2	T12	9	50	412	?	-	>250	-	27.7	28.6	>250	>250	
S, W=500	G1	T500	1	-	500	No	-	27.6	-	31	-	51.8	42.9	
S, W=750	G4	T750	1	-	750	No	-	-	-	-	-	28.6	-	
Ramified	D1	L	5	50	-	Yes	204	>250	-	>250	>250	>250	>250	
	C1	L	9	50	-	Yes	404	>250	-	>250	>250	>250	>250	
	C2	T24	5	75	-	Yes	-	>250	>250	-	-	>250	>250	
	B1	L	11	75	-	Yes	-	>250	>250	>250	>250	>250	>250	

Membrane broken He leak Broken No leak not broken Membrane undulated

Table 1: Pressure at failure or maxiumum pressure reached

The inlet of Wf 219 were etched with the wafer glued with quickstick to a support wafer. After the etching and PR stripping, weird stripes were visible on some parts of the wafer and could not be removed by O2 plasma. The trench observation revealed that these stripes were due to PR not protecting the wafer probably because of overheating.

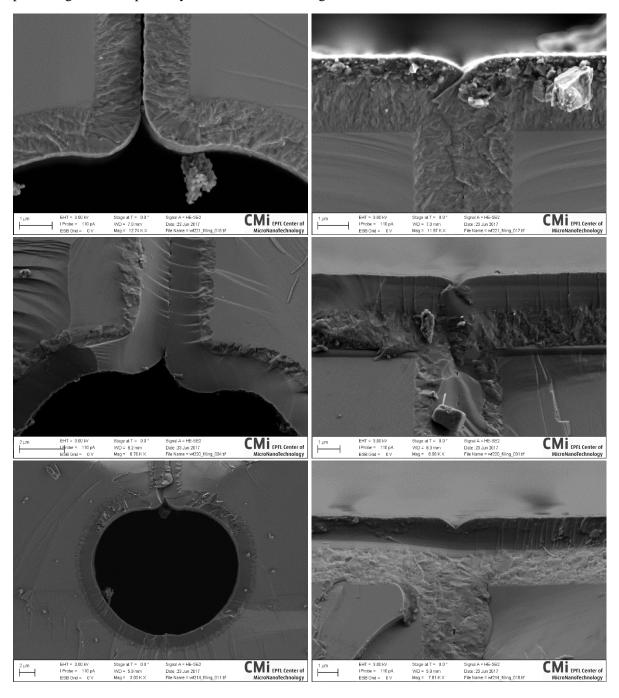


Figure 1: image of trench for three closing types. Wf 221: No oxide, no mask Wf 220: Oxide + mask Wf 214: Oxide, no mask

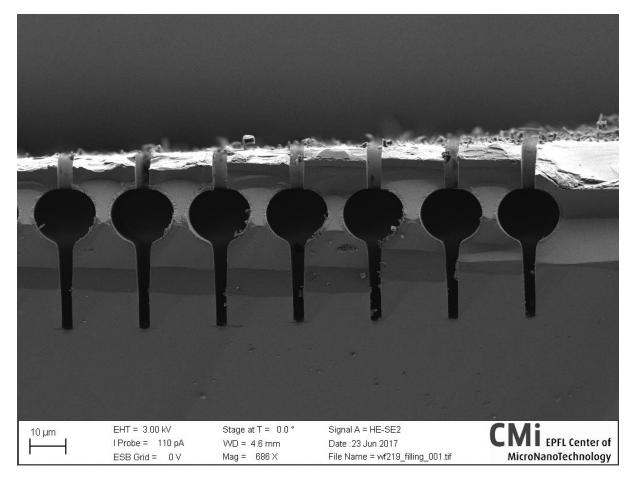


Figure 2: trench observation of Wf219: some parts of the sample have been exposed during the inlet etching