Update on CR-39 Calibration

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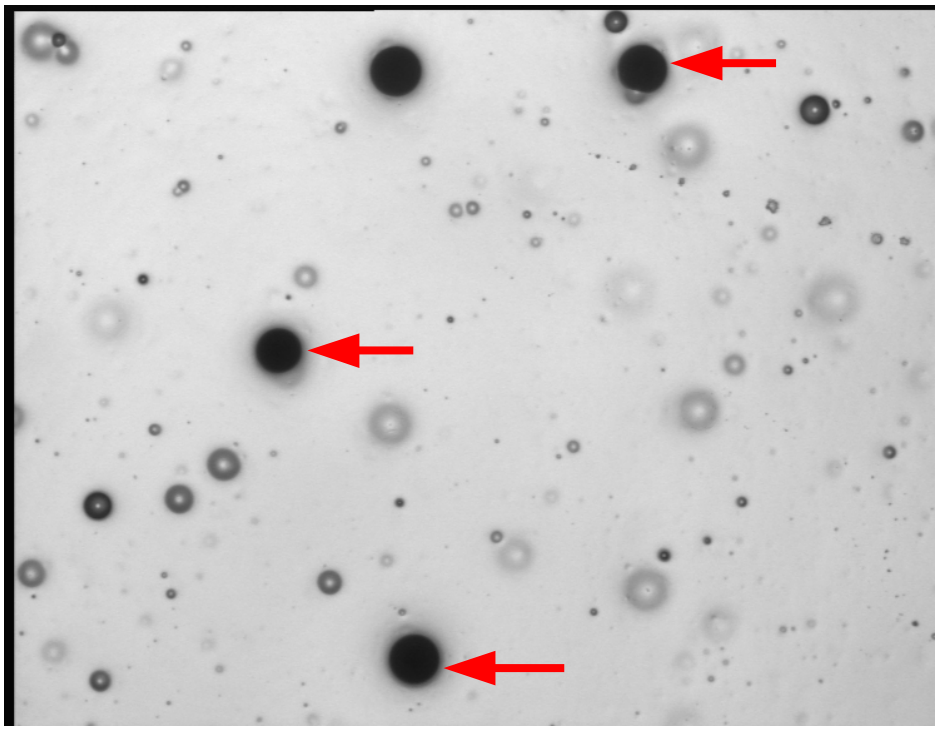
Stability of etching rate

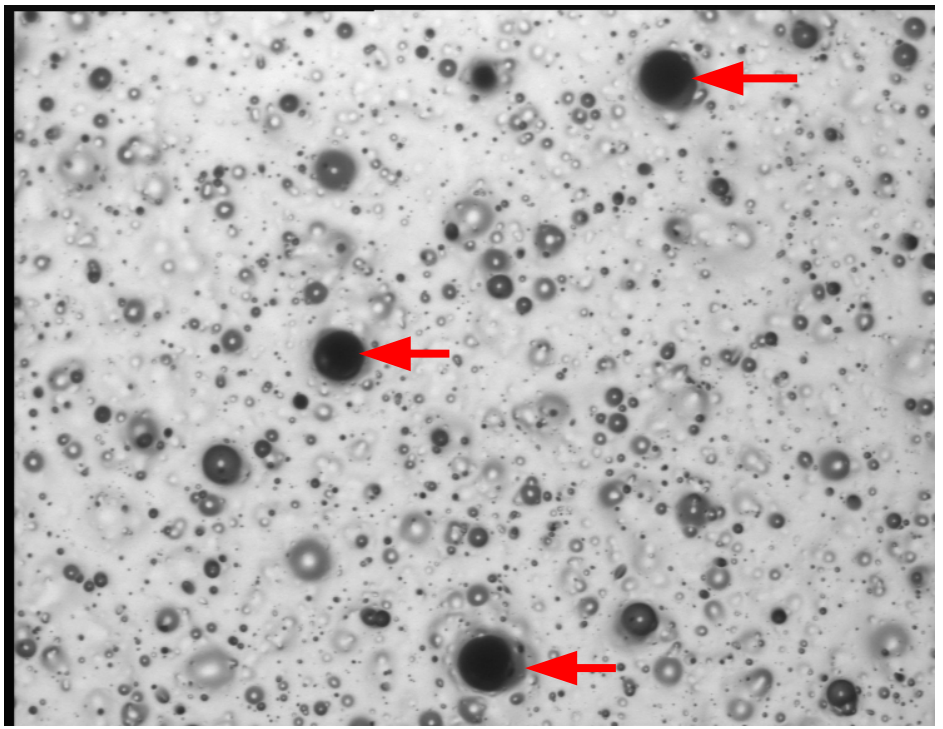
Etchant: 5.5 N KOH + Ethyl Alcohol at 70 ºC

Alcohol %	NTD label	Description	Bulk etch rate with duration of etching (µm/h)		
			8h	16h	24h
3%	XeCR1-F1-1	Exposed to Xe	3.44	3.68	3.47
	XeCR1-H9-1	Exposed to Xe + MoEDAL	4.24	4.30	4.33
5%	ST14-T-CR39-2-1	Exposed to Fe	5.20	5.69	
	ST2-9-1	Exposed to Fe + MoEDAL	6.81	6.94	

Effect of 5% Alcohol

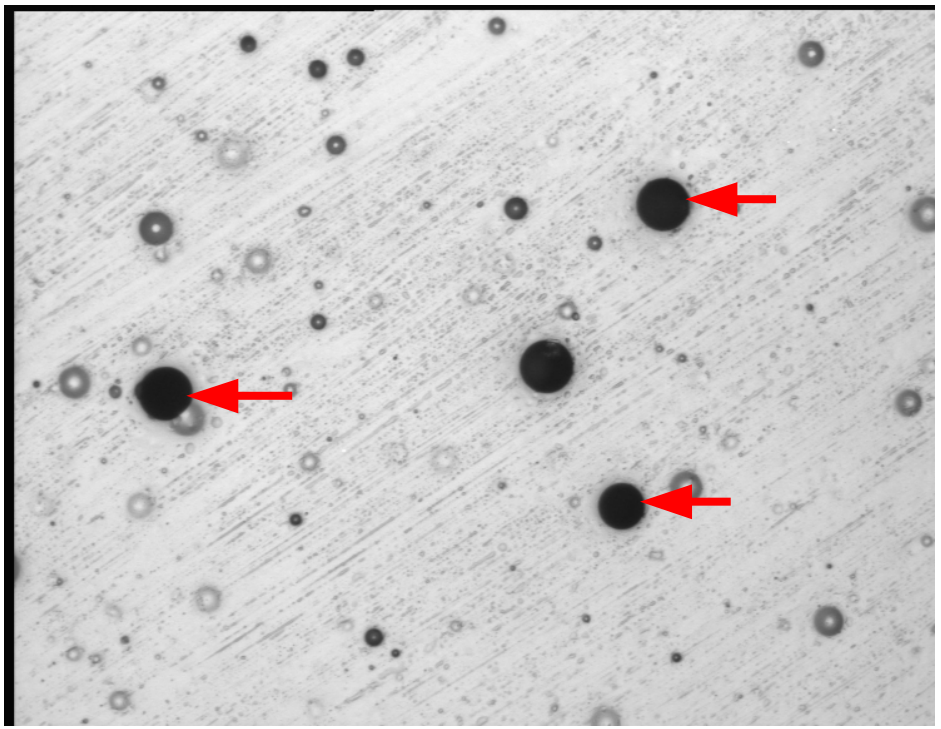


Xe tracks

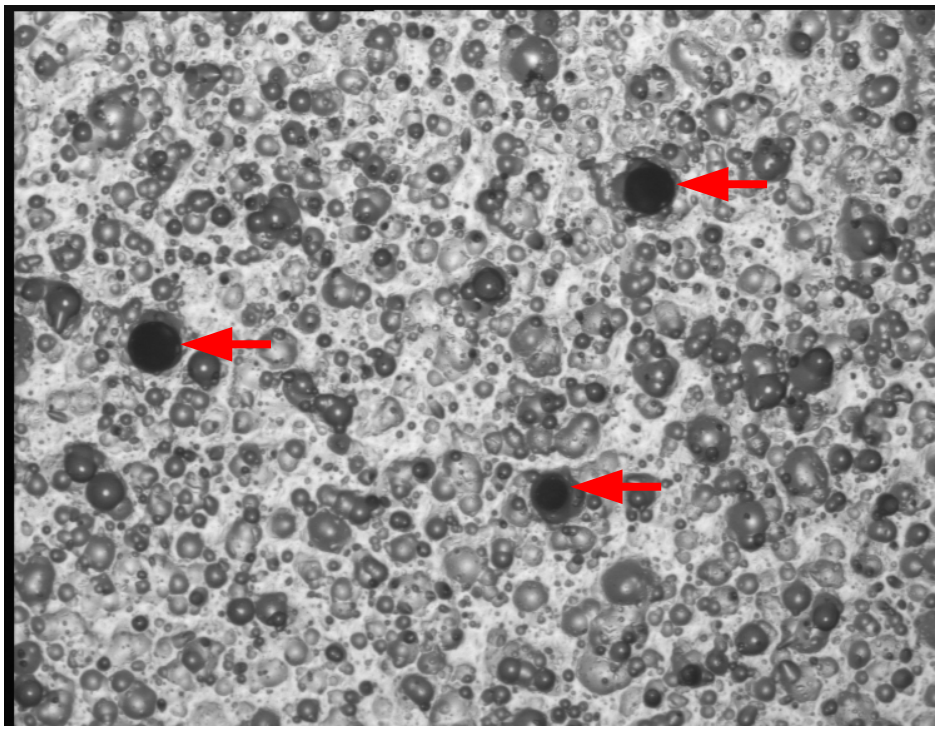


Xe + MoEDAL Background

Effect of 3% Alcohol



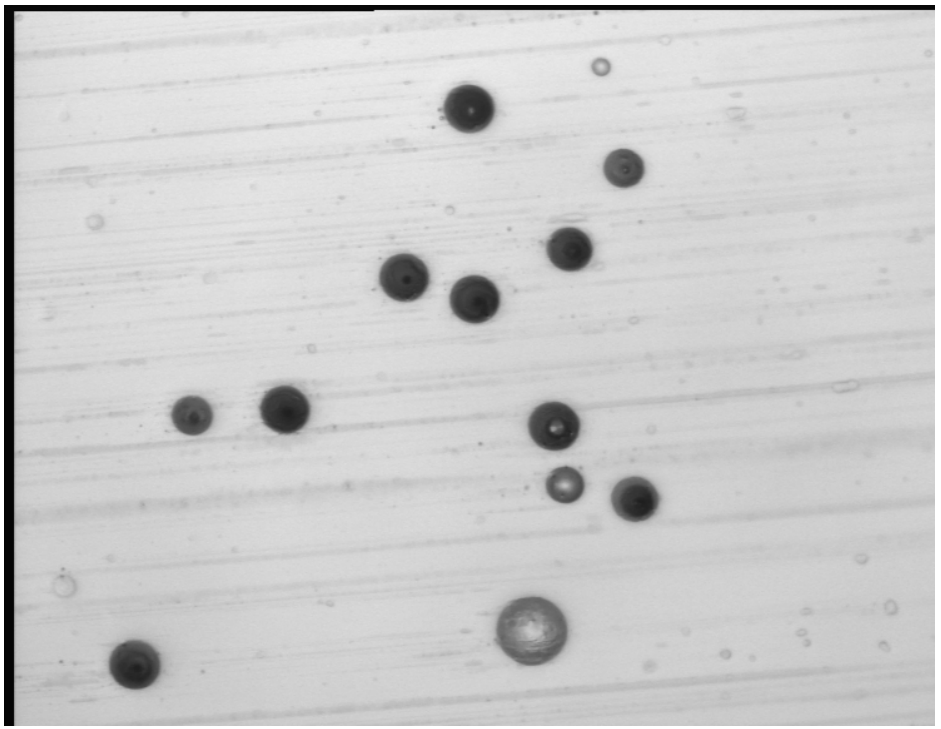
Xe + Fragments



Xe + Frag. on MoEDAL background

=> CR-39 ‘Practical’ threshold under this etching condition lower than that of Makrofol (Z/β ~ 55)

Fe and Fragments on CR 39



3 % Alcohol

5% Alcohol ; NO TRACKS !!

With 5% alcohol detection threshold is raised above Z/β > 26

Questions to be investigated

- Where exactly is the detection threshold with KOH and 3% alcohol ?
- More importantly, where is the ‘Practical’ detection threshold ?
- Will the use of NaOH instead of KOH be better ?
- Need data on exposure durations and integrated luminosities for different sets of exposures at LHCb.