



quality data package

AZ Mir 701 (29CPS)

Comparing POR version vs PFOA-free version

Date: July 2020

Confidential Information

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01

PROCESS PARAMETERS

Process parameters

Developer AZ 326 MIF

PCN 29cps
PFOA-free 29cps

	Developer AZ 326 MIF	
Substrate	Si wafer (HMDS primed)	
Film thickness	1.620 µm by single coat	
Softbake	90 °C / 90 s (prox. Hotplate)	
Exposure tool	Nikon i-line stepper NA = 0.54	
Post exposure bake	115 °C / 90 s (prox. Hotplate)	
Developing	1 x 60 s puddle	
Resist type	POR 29cps	PFOA-free 29cps
Exposure	200 mJ/cm² 1:1 @ L/S 0.50 µm (CD-SEM, top down)	195 mJ/cm² 1:1 @ L/S 0.50 µm (CD-SEM, top down)





02

spin curve

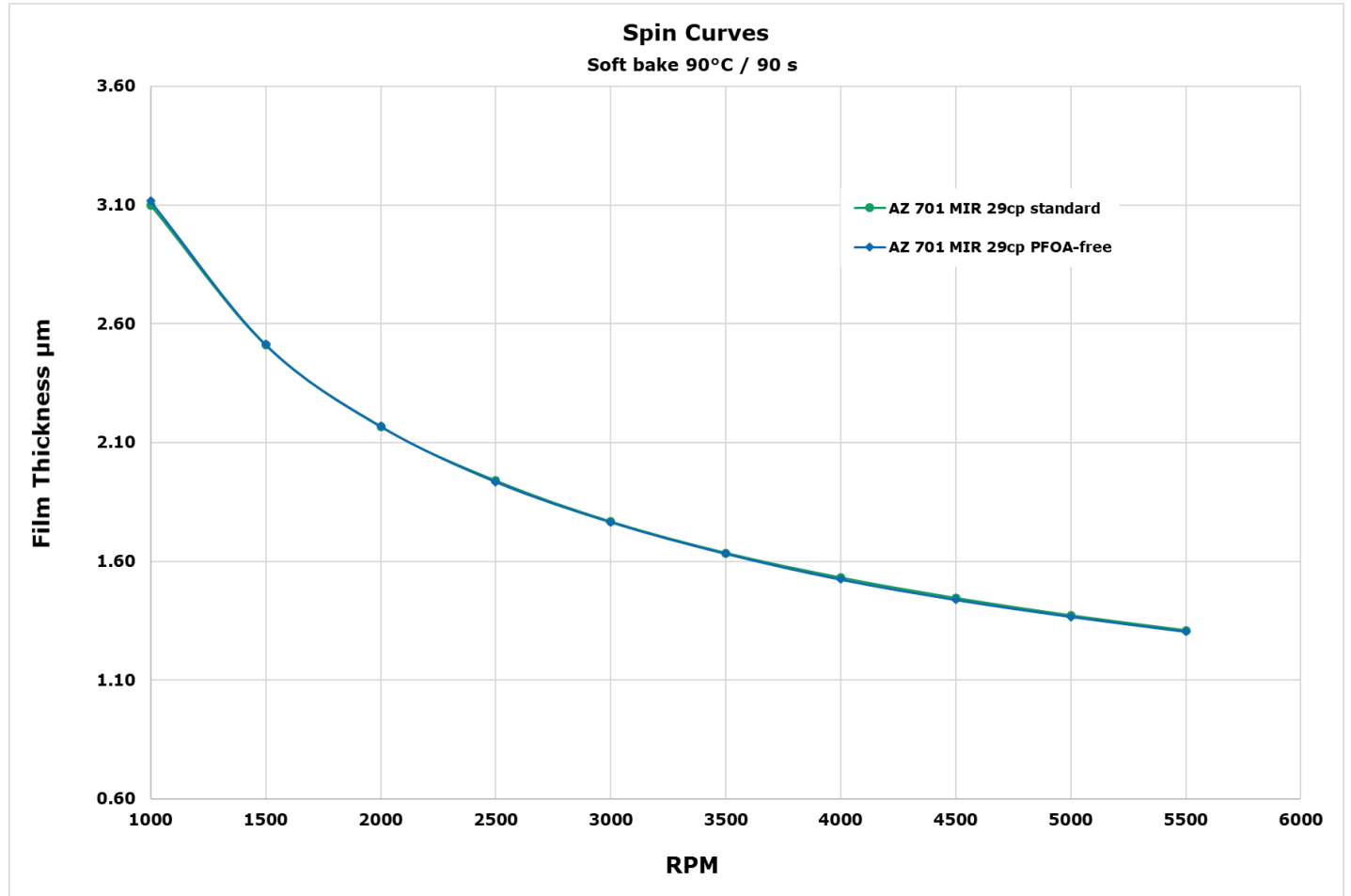
(POR VS PFDA-free)

AZ MIR 701 (29cps)

POR vs PFOA-free

Spin curve comparison

	F/T (µm)	POR 29cps	PFOA-free 29cps
RPM	1000	3.10	3.12
	1500	2.51	2.51
	2000	2.17	2.17
	2500	1.94	1.94
	3000	1.77	1.77
	3500	1.64	1.63
	4000	1.53	1.52
	4500	1.45	1.44
	5000	1.37	1.37
	5500	1.31	1.30



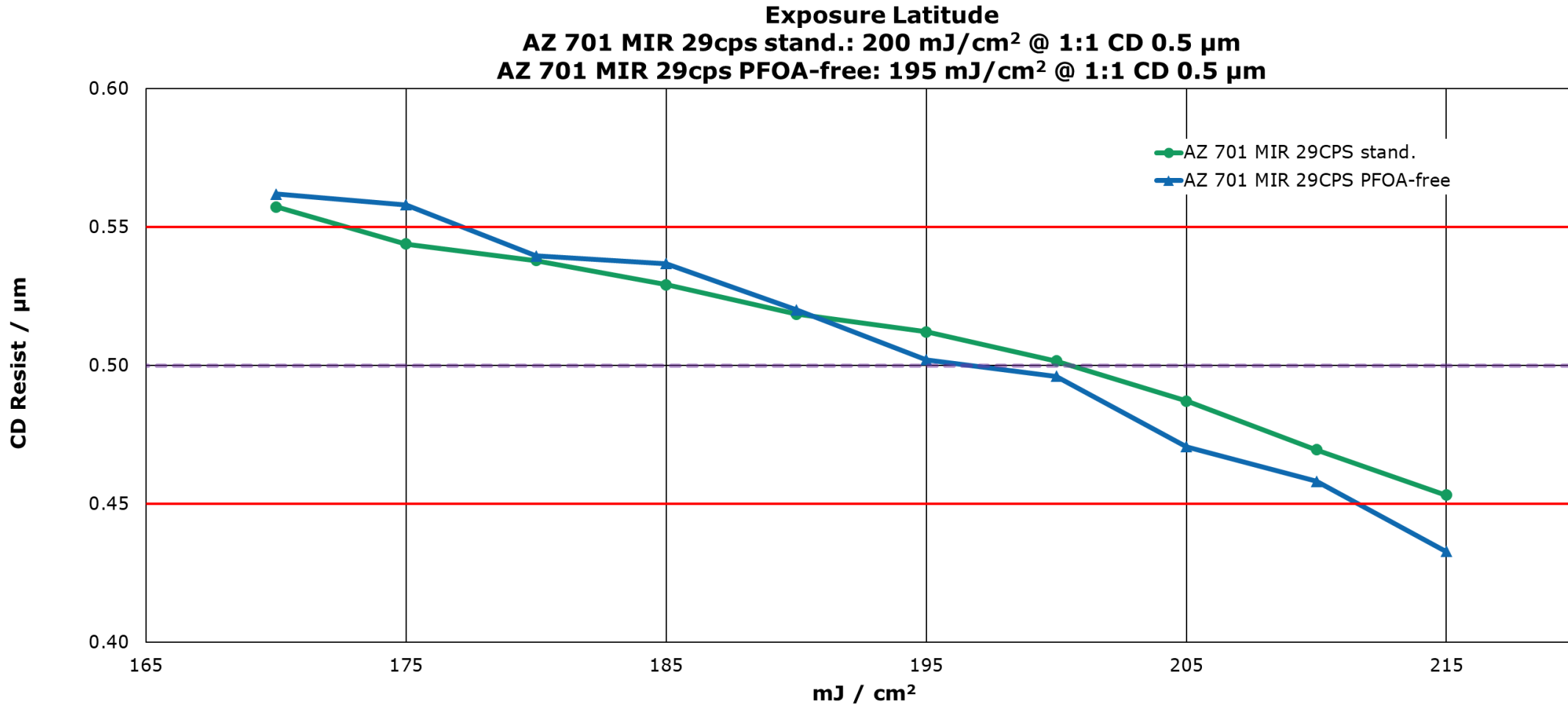


03

EXPOSURE Latitude

Developer AZ 326 MIF

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Note: this measurement has been pursued in Wiesbaden. Therefore, applied tools and methods are not identical to those utilized as specified in the CoA by the original source.



AZ MIR 701 (29cps)

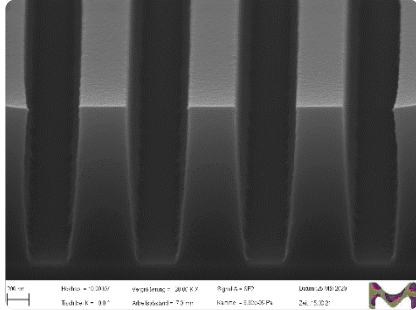
POR vs PFOA-free

Exposure Latitude (AZ 326 MIF)

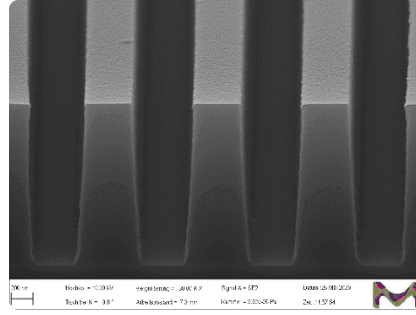
CD: 0.50 μm

AZ MIR 701
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POR

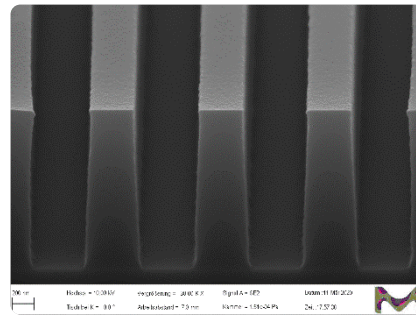
Exposure: 170 mJ/cm²



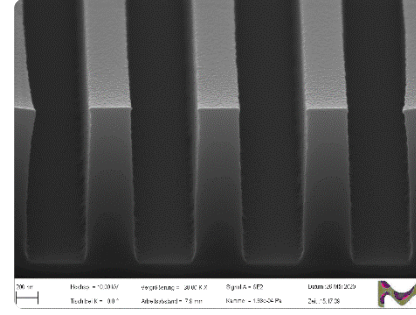
Exposure: 180 mJ/cm²



Exposure: 200 mJ/cm²

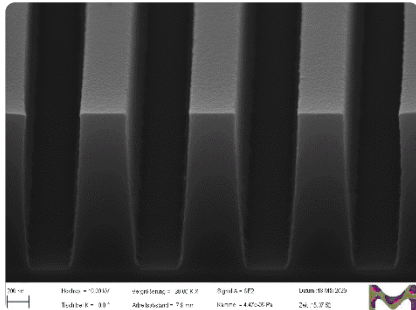


Exposure: 210 mJ/cm²

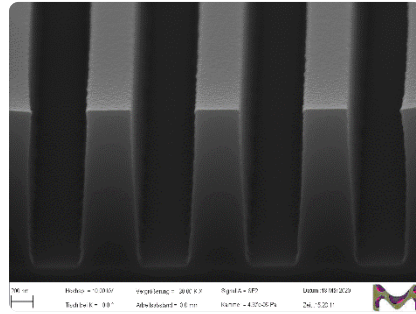


AZ MIR 701
29 CPS
PFOA-Free

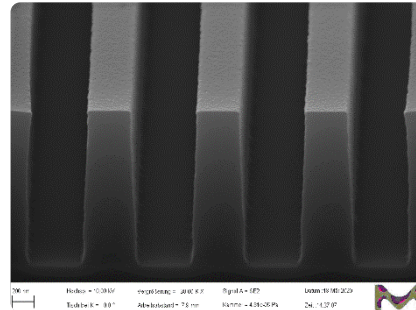
Exposure: 170 mJ/cm²



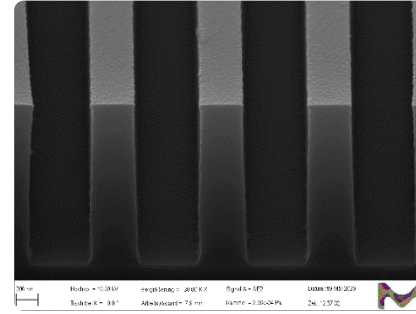
Exposure: 180 mJ/cm²



Exposure: 195 mJ/cm²



Exposure: 210 mJ/cm²





Linearity

Developer AZ 326 MIF

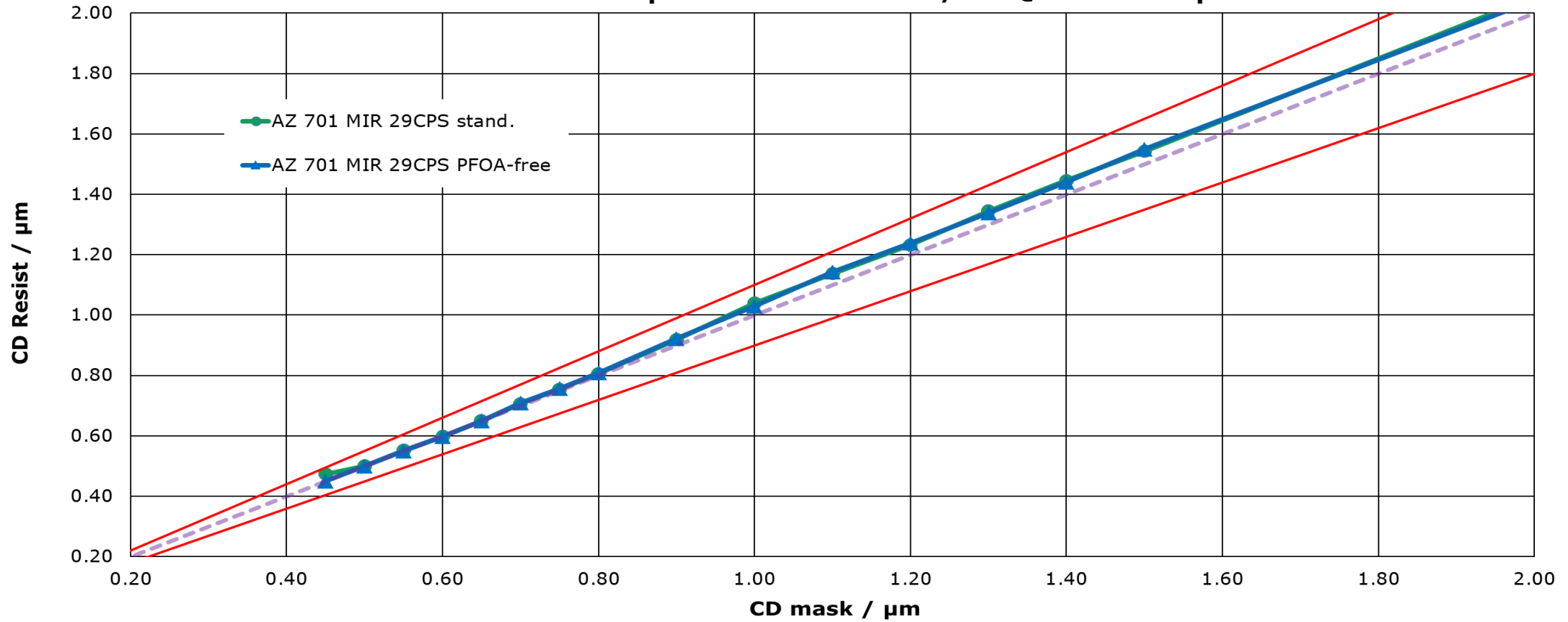
AZ MIR 701 (29cps)

POR vs PFOA-free

Linearity (AZ 326 MIF)

Linearity

AZ 701 MIR 29cps stand.: 200 mJ/cm² @ 1:1 CD 0.5 μm
AZ 701 MIR 29cps PFOA-free: 195 mJ/cm² @ 1:1 CD 0.5 μm



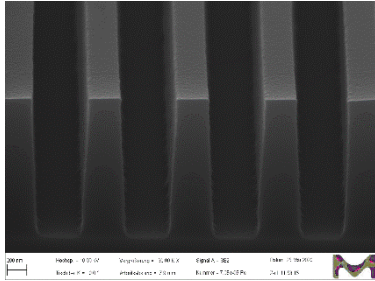
AZ MIR 701 (29cps)

POR vs PFOA-free

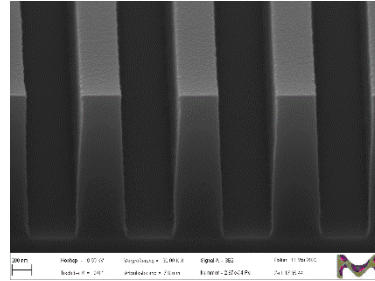
Linearity (AZ 326 MIF)

AZ MIR 701
29 CPS
POR

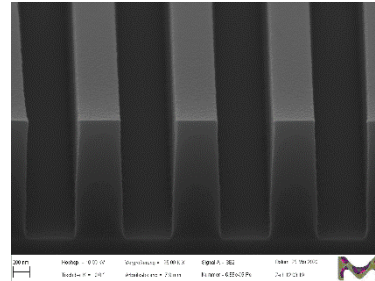
CD 0.45 μm
200 mJ/cm^2



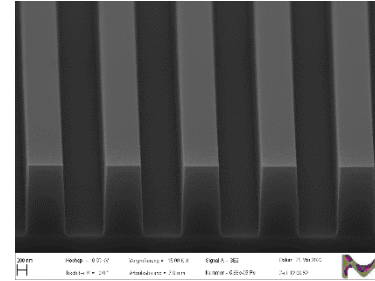
CD 0.50 μm
200 mJ/cm^2



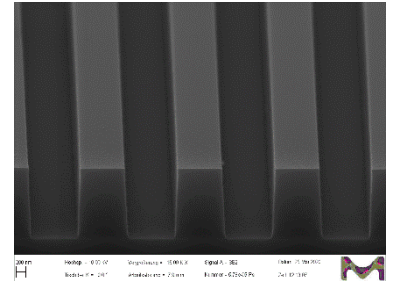
CD 0.60 μm
200 mJ/cm^2



CD 0.80 μm
200 mJ/cm^2

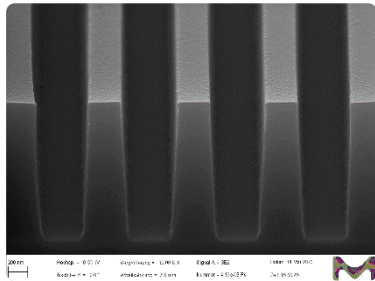


CD 1.00 μm
200 mJ/cm^2

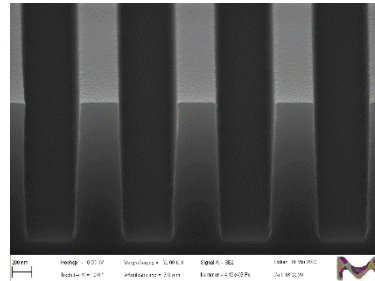


AZ MIR 701
29 CPS
PFOA-Free

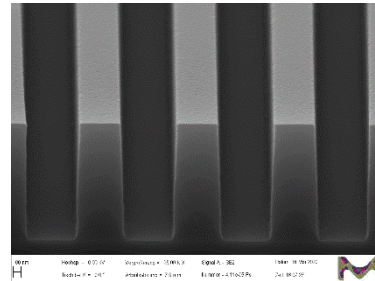
CD 0.45 μm
195 mJ/cm^2



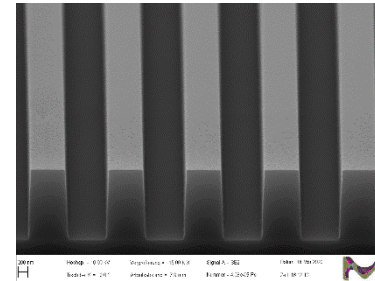
CD 0.50 μm
195 mJ/cm^2



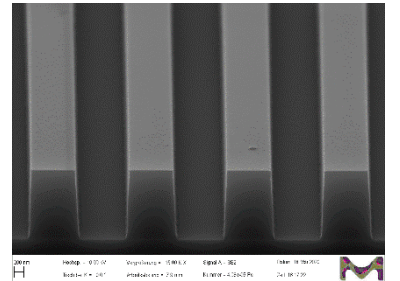
CD 0.60 μm
195 mJ/cm^2



CD 0.80 μm
195 mJ/cm^2



CD 1.00 μm
195 mJ/cm^2



05

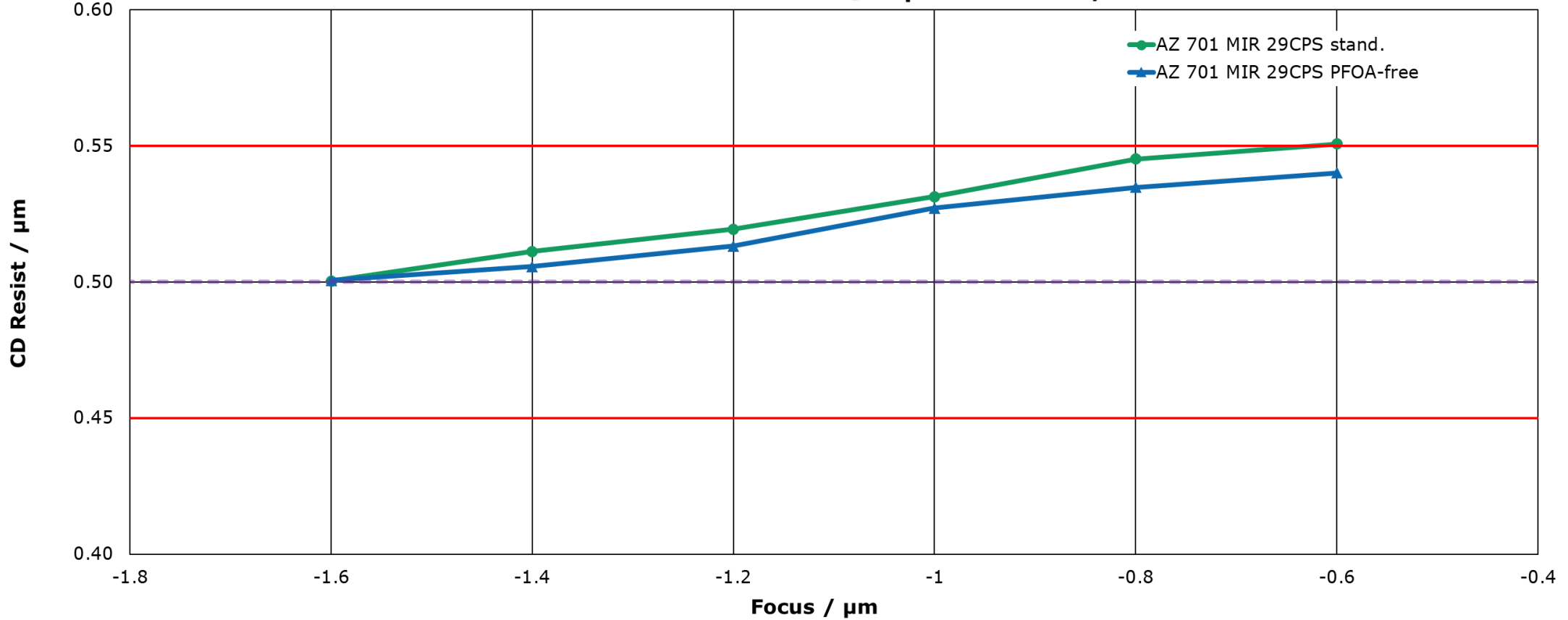
FOCUS Latitude

Developer AZ 326 MIF

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Focus Latitude

Stand. AZ 701 MIR 29 CPS @ Exposure 200 mJ/cm^2
PFOA-free AZ 701 MIR 29 CPS @ Exposure 195 mJ/cm^2

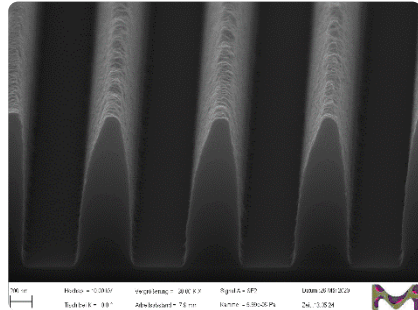


AZ MIR 701 (29cps) POR vs PFOA-free

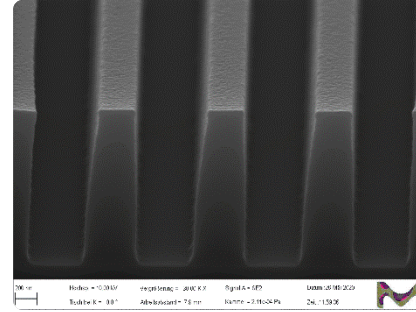
Focus Latitude (AZ 326 MIF)
CD: 0.50 μm

AZ MIR 701
29 CPS
POR

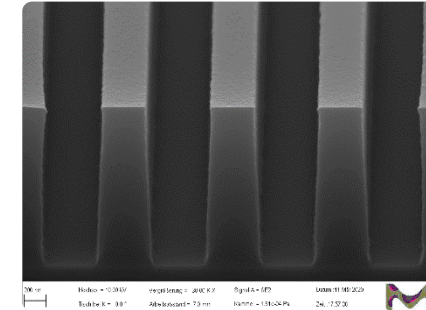
Exposure: 200 mJ/cm²
Focus - 0.8 μm



Exposure: 200 mJ/cm²
Focus - 1.2 μm

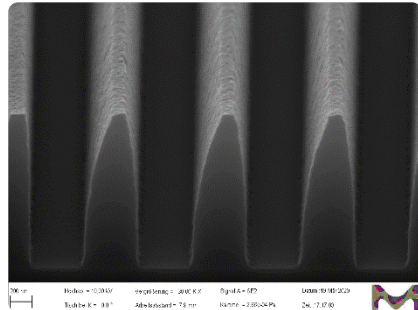


Exposure: 200 mJ/cm²
Focus - 1.6 μm

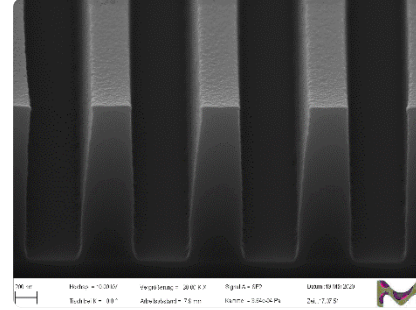


AZ MIR 701
29 CPS
PFOA-Free

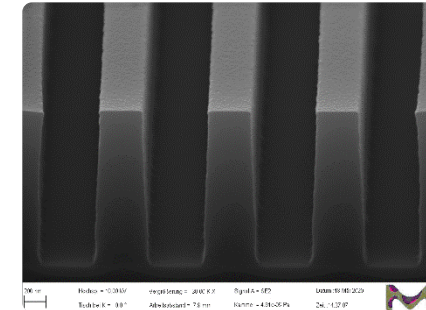
Exposure: 195mJ/cm²
Focus - 0.8 μm



Exposure: 195 mJ/cm²
Focus - 1.2 μm



Exposure: 195 mJ/cm²
Focus - 1.6 μm

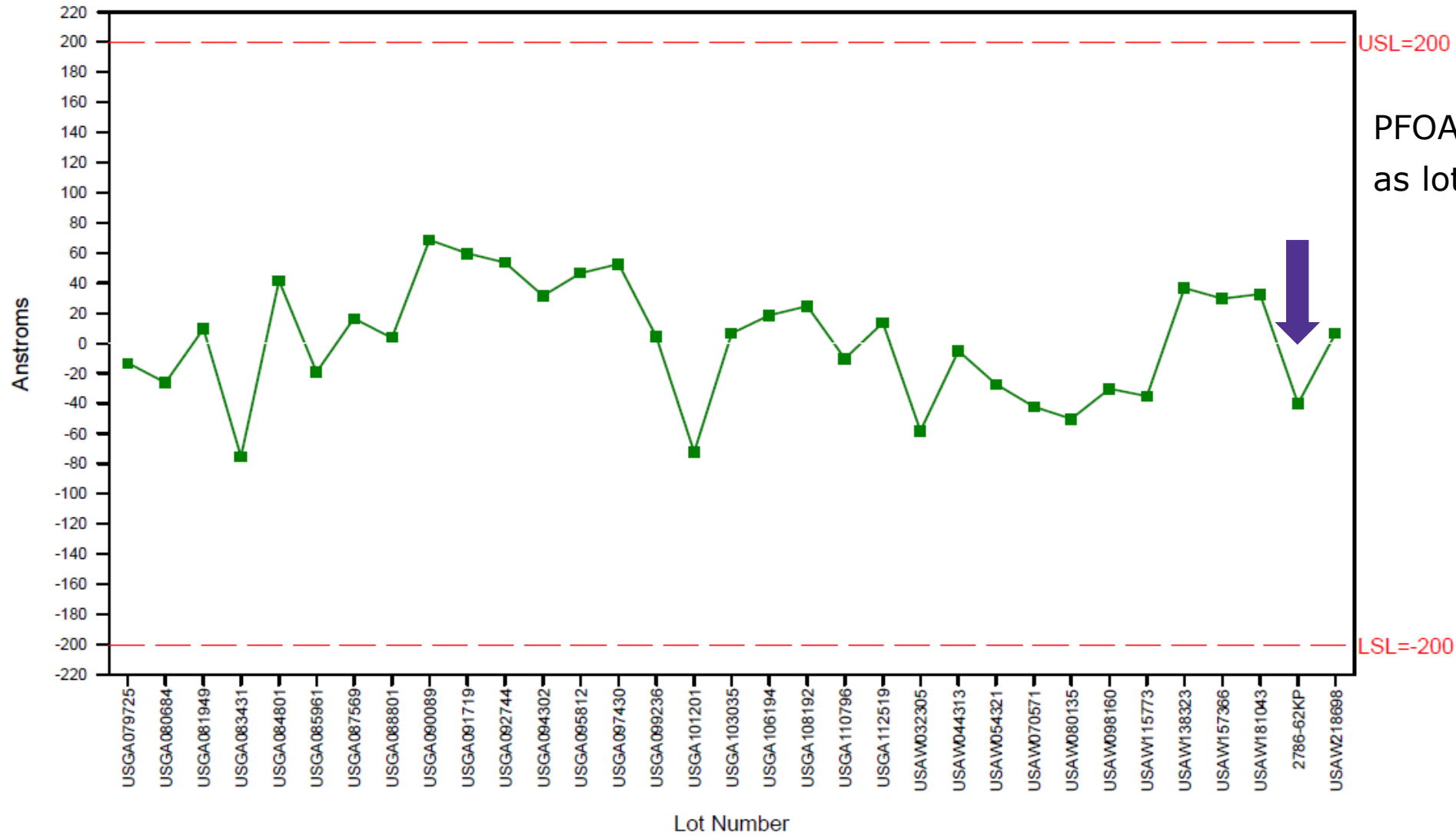




06

SPC CHARTS

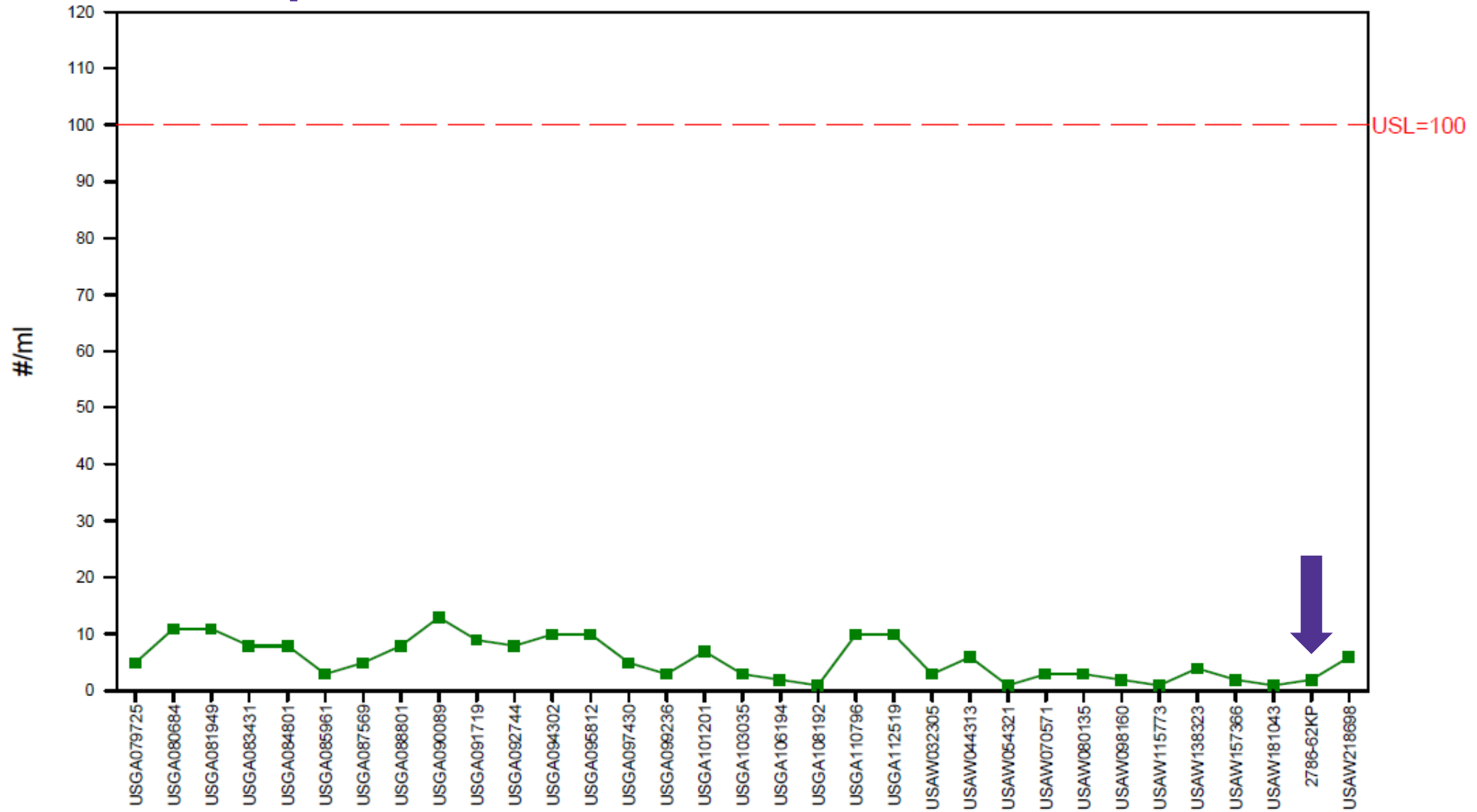
SPC Chart – Film Thickness vs. Reference



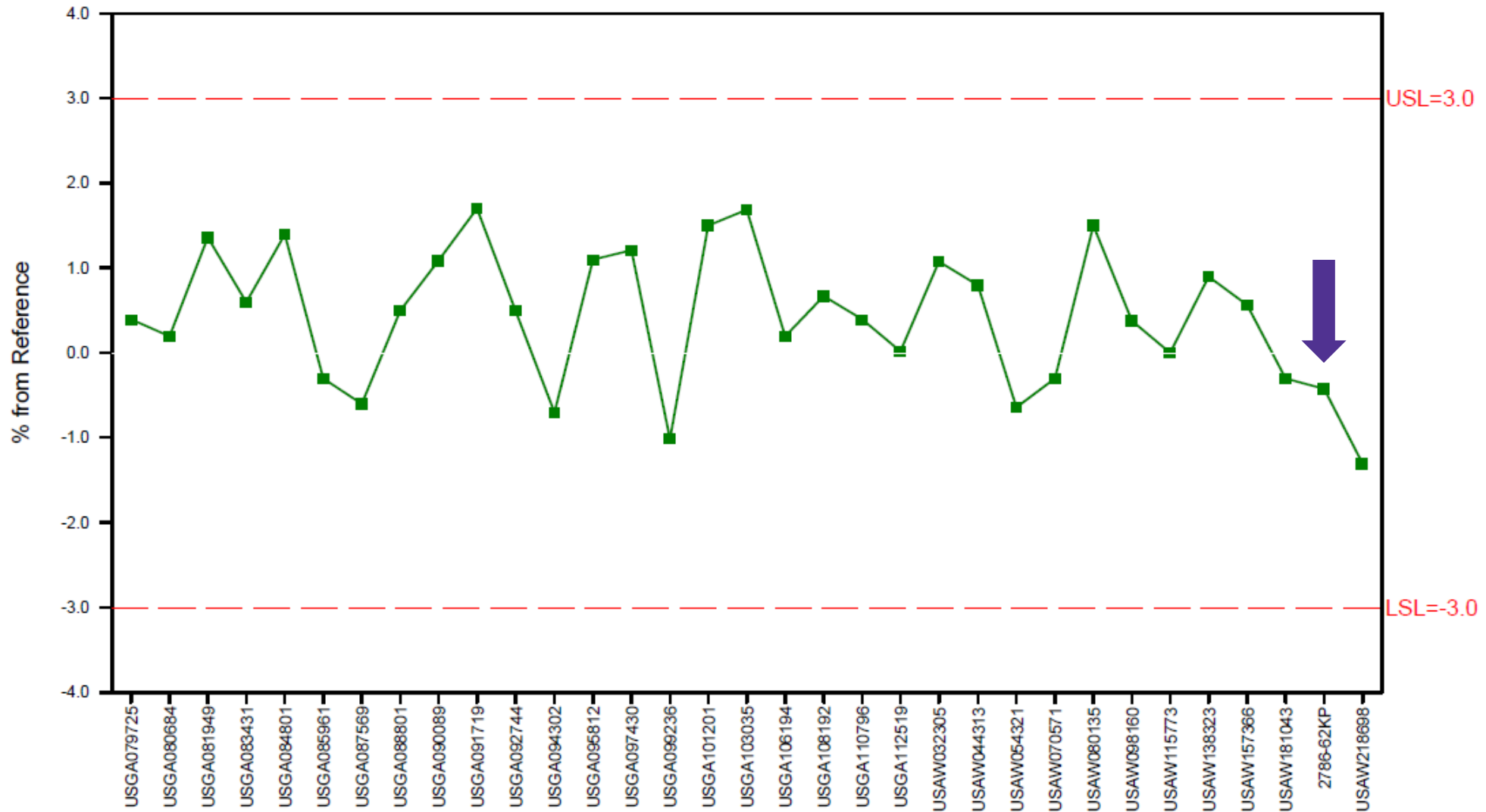
PFOA-free lot is shown as lot# 2786-62KP



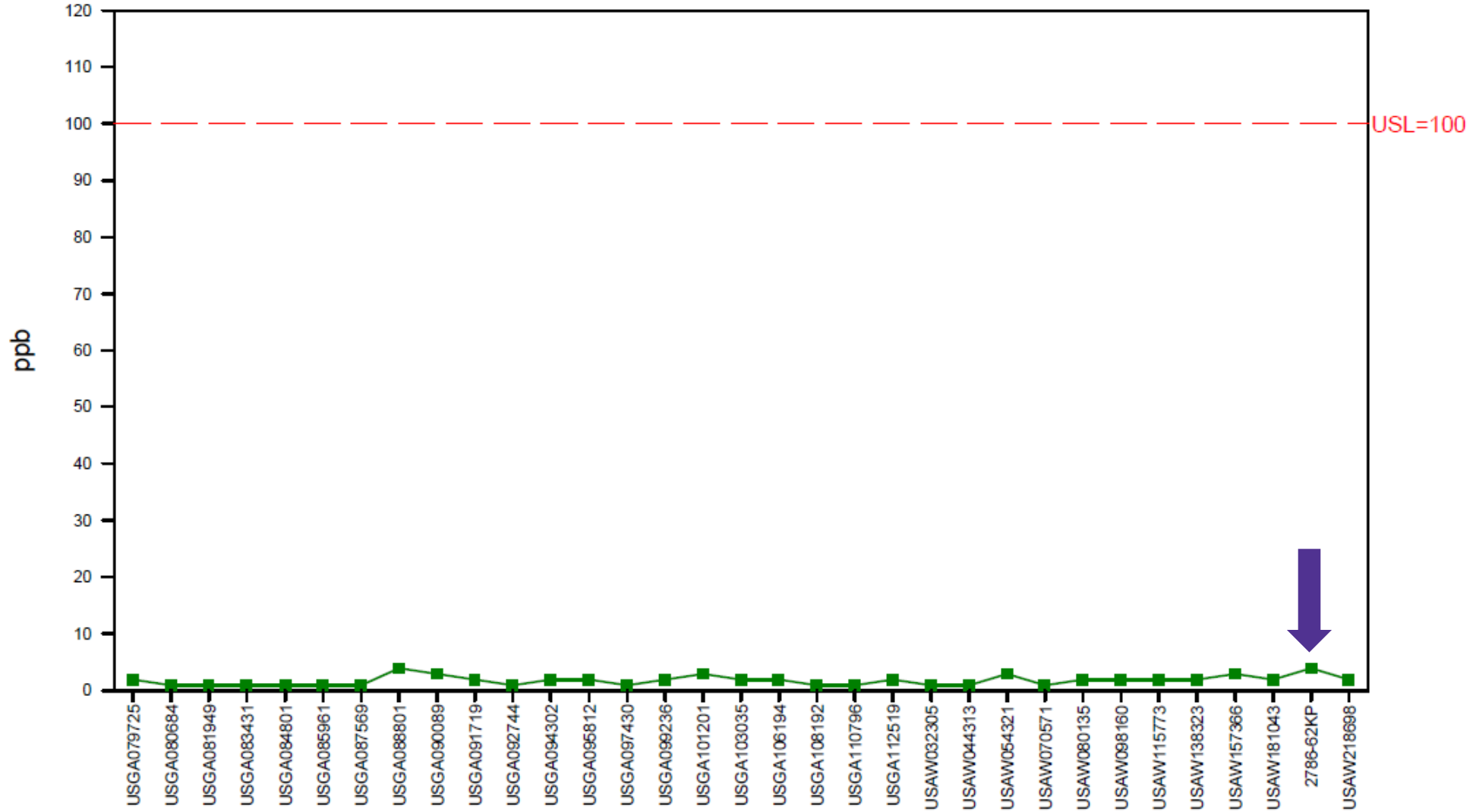
SPC Chart – Liquid Particle Counts > 0.3um



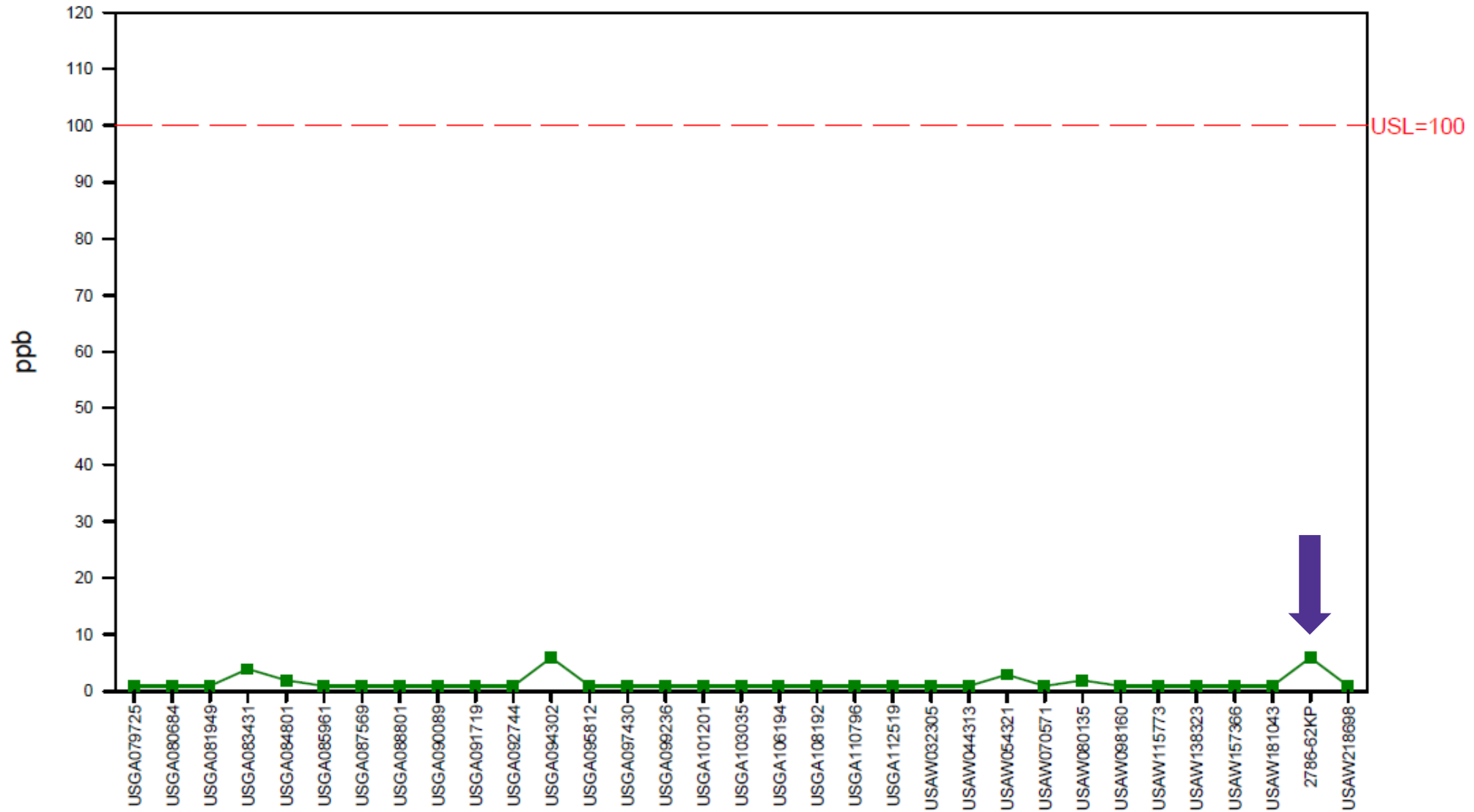
SPC Chart – PS: I-line E nominal vs. Reference



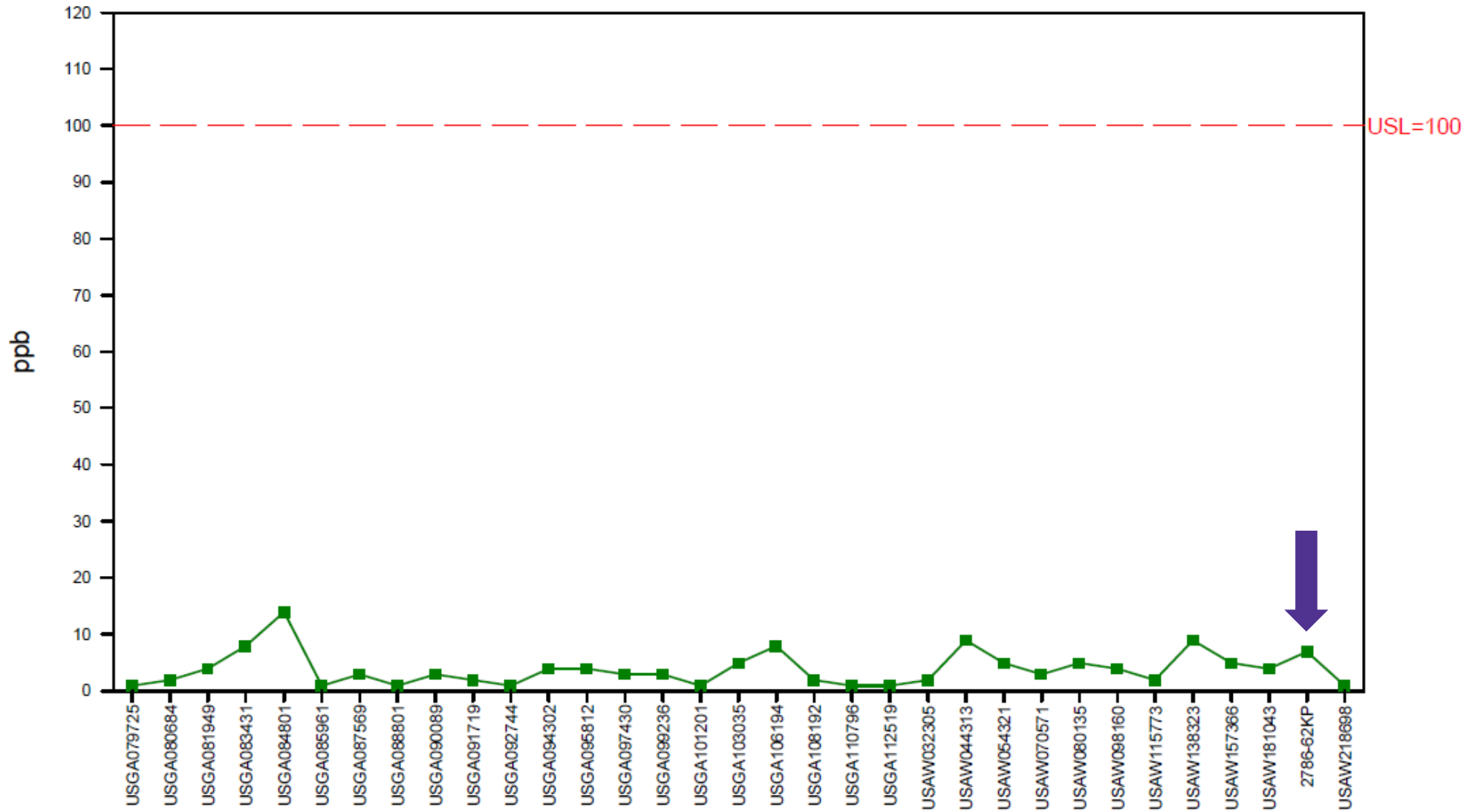
SPC Chart – Iron



SPC Chart – Potassium



SPC Chart – Sodium



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