



Science and
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Facilities Council

IFAST 2024 annual meeting – WP10.5

Daresbury Laboratory update

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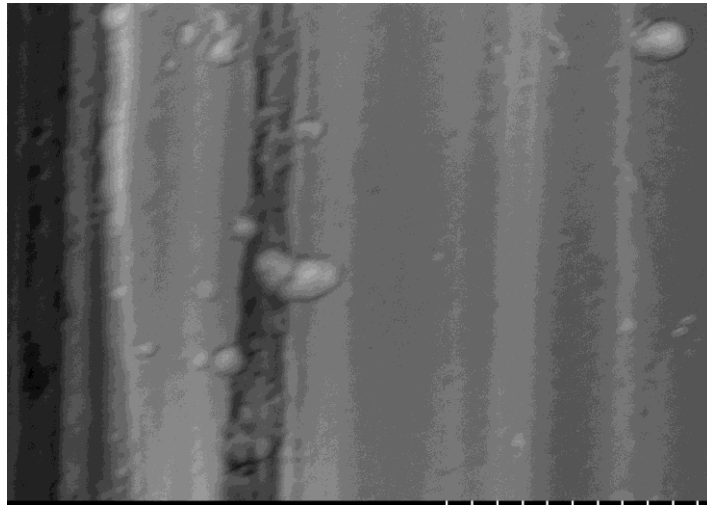
3-port PSD Vessels:

Sample	Material	Filament	Power	U (V)	I (A)	P (W)	I _{solenoid} (A)	P (mbar)	T (h:m)
S3.b	Cu	3x1 mm TiZrV twisted wire	Pulsed	170	0.43	74	18	2.4×10 ⁻²	2.2
IFAST 21207.1.01 #04	Cu	3x1 mm TiZrV twisted wire	Pulsed	160 - 140	0.45 – 0.72	74 - 101	16-13	2.5×10 ⁻²	05:06
IFAST 21207.1.01 #03	Cu	3x1 mm TiZrV twisted wire	Pulsed	170- 160	0.46	78			
IFAST 21207.1.01 #01	Cu	3x1 mm TiZrV twisted wire	Pulsed	167- 181	0.42- 0.46	75-78	I _{solenoid} (A)	2.8×10 ⁻²	05:07

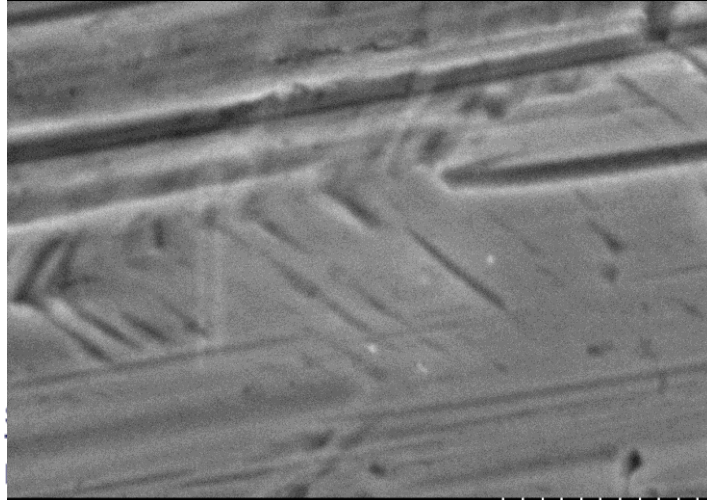
Leaked during activation- Saturated
Did not recover on a second activation

3-port Vessel SEM

S3.b

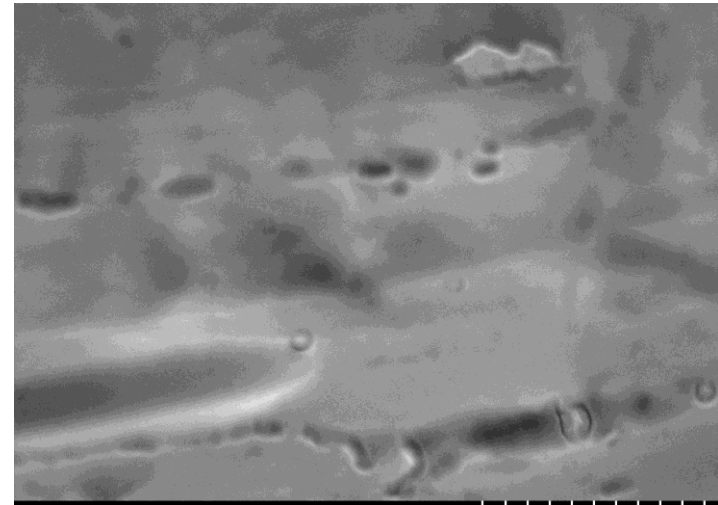


SU5000 20.0kV 6.3mm X90.0k SE(L) 500nm

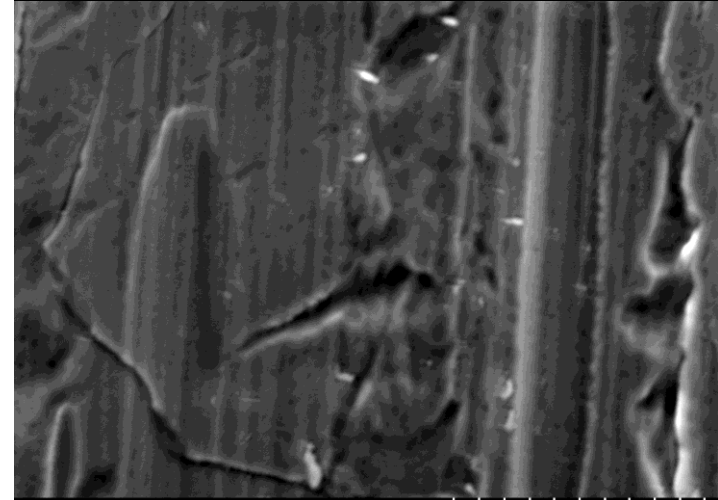


SU5000 20.0kV 6.3mm x7.00k SE(L) 5.00µm

IFAST - 21207.1.01 #04



SU5000 20.0kV 6.3mm X8.00k SE(L) 5.00µm



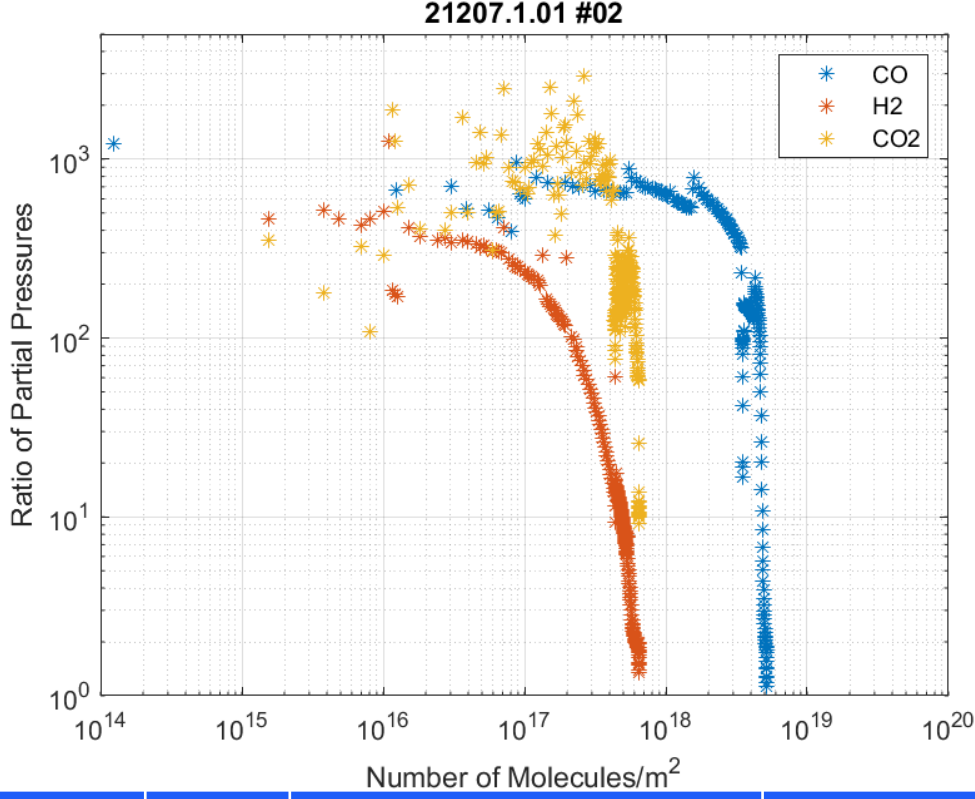
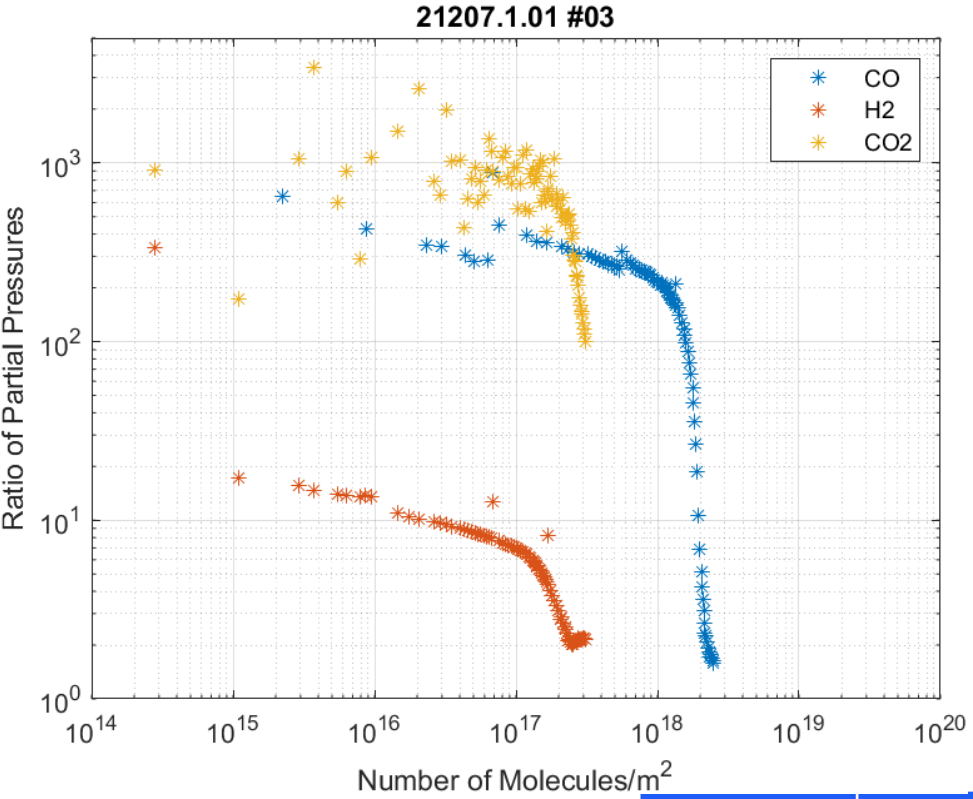
SU5000 5.0kV 5.3mm x15.0k SE(L) 3.00µm



S3.b

T (°C)	α_{CO}	α_{H2}
180	0.01	0.008
200	0.01	0.008

3-port Vessel – Analysis - 180 °C



Tube	α_{CO}	α_{H2}	α_{CO2}	CO Capacity (CO/m ²)	Sent To:
#03	0.008	0.001	0.02	2×10^{18}	SOLIEL
#01	0.009	0.001	0.02	4.8×10^{18}	DLS

Next steps

- Design new deposition system for 1 m Tubes
 - Moving magnet
 - Stationary tube set up
 - Pump closer to the tube
- 8 x 1 m OF Copper tubes ordered for testing before the next IFAST tubes
 - Cleaning with BPS-172
- IFAST Tubes
 - Zr coatings with new deposition facility
 - Dual layer Zr?
 - 1 coated already but not working
- TiZrVHf Alloy rod coatings
 - 38mm diameter
 - 20mm too thin – brittle target cannot be stretched

0.5 m Sample Depositions:

Obstacles

- Issue with 0.5 m deposition system now fixed
- Cu tubes from DESY misplaced

Where we are now:

- New Copper tubes from DESY being deposited
 - 4 x Columnar TiZrV coated
 - 4 x Columnar Zr coated
- 1 is ready for analysis to be installed after the meeting

Sample	Material	ID (mm)	Filament	Power (W)	P (W)	I (A)	U (V)	I _{solenoid} (A)	Pressure (mbar)	T (h)
TK-Ag-50-21	Cu	20	3 x 1mm TiZrV	DC	71-75	0.27-0.29	256-278	2.0-2.2	9.2×10 ⁻²	05:12:00



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Thank you



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