

# Fall 2018 UCN Run Guide Parts

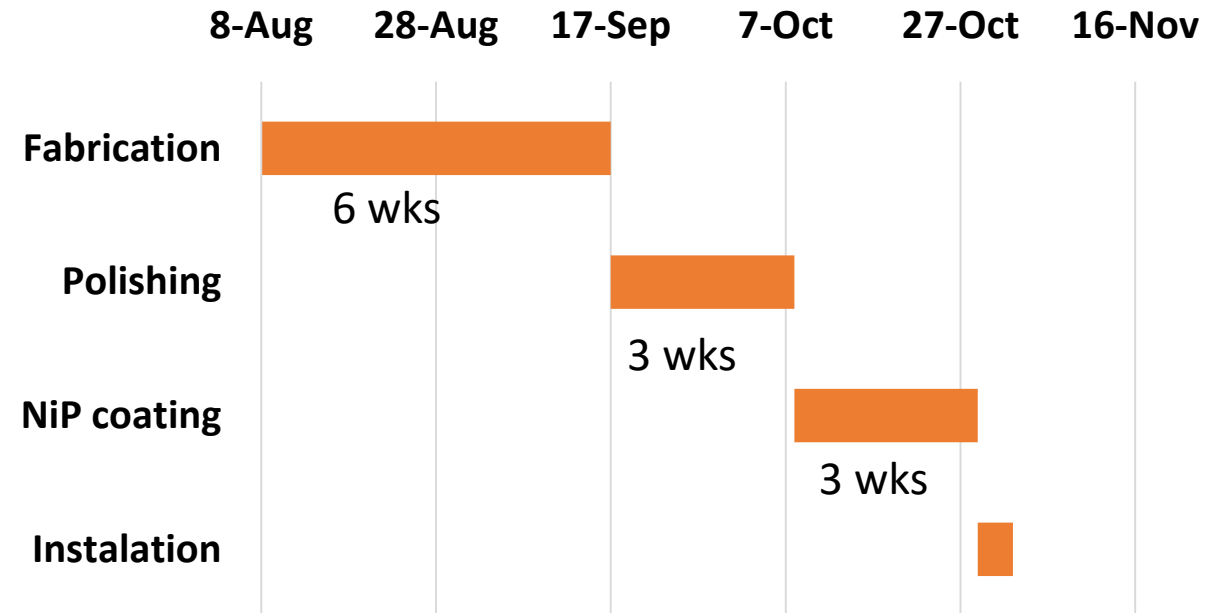
Fall 2018 Stainless NiP guides: Monitor/Pin hold port, 4 GV adapters, burst disk sub guide, 2 45 deg adapters, 750 cm guide: 9 parts

Fall 2018 Glass NiMo guides: 2, 1 meter sections+ elbow

Received Fab quotes for the first 5 parts

Company	CAD	Lead time	Redraw Parts	Surface finish	Leak Check
Vac. Prod. Canada (Nor-cal)	8243	7-9 weeks	Yes	glass bead	yes
Anderson Dahlen	15461	7-8 weeks	yes	16Ra uin	yes
Lesker	9356.1	7-8 weeks	yes	40-60 Ra uin	yes
Kinetic Machine (local)	4800	4-5 weeks	no	none	No (Russ do)

Expenses	2017 RTI grant
NiP 2017 guides	4000 Spent
Surface Science LANS	3500 Spent
UW NiP	2000 Spent
Part Fab	15000
Polishing	8960 Based on last years quote 1.4 exchange rate
NiP coating	10332 includes all new guides (45 deg adapt, 750 cm, ..) 1.4 exchange rate
NiMo guides	6400 1.6 exchange rate
Li6Det housing	7500 Local company
Fe Foil	3000 Lebow -Spent
More Wilison	2000 Local company
Total	-16478



# Electroless NiP coating at Uwinipeg

## Goal: NiP coat glass tubes

(I haven't found a electroless NiP coating company that will coat on glass)

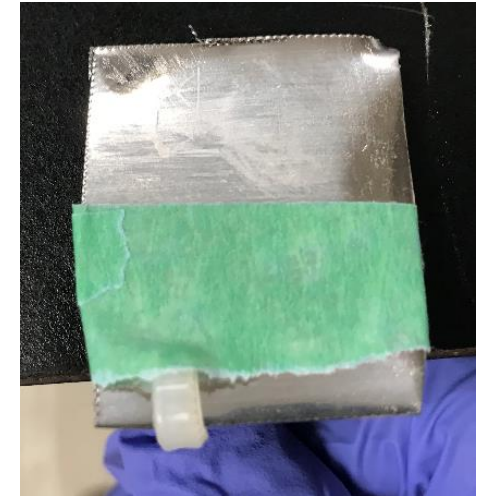
We do it: Silver the glass, then NiP coat the Silver  
Use "artistic, hobby" kits: Casewell Inc/ Angels Gilding  
hire an undergrad: Michael Grenhan

## NiP on SS first

Sample	Avg Ra (uin)	Avg Rz (uin)	Avg Rzmax (uin)
SS bare #8 polish	2	4	6
NiP SS: 6 um (15min)	12	75	223
NiP SS: 12 um (30min)	8	44	74
NiP SS: 25 um (60min)	8	60	124



NiP plating solution on stir/hot plate



SS sample after NiP coating

Exploring gentle polishing afterwards (with cloth)  
—getting Surface Elemental profile

Silvering glass looks good, Now to NiP coat it...

Preparing to coat tubes

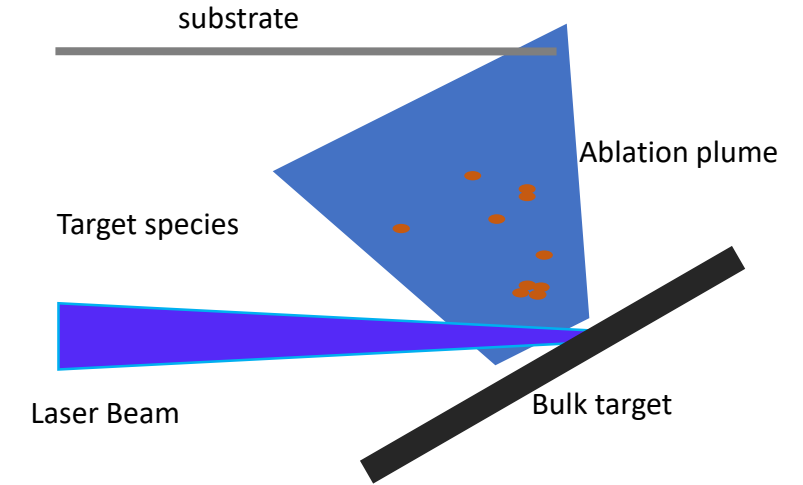
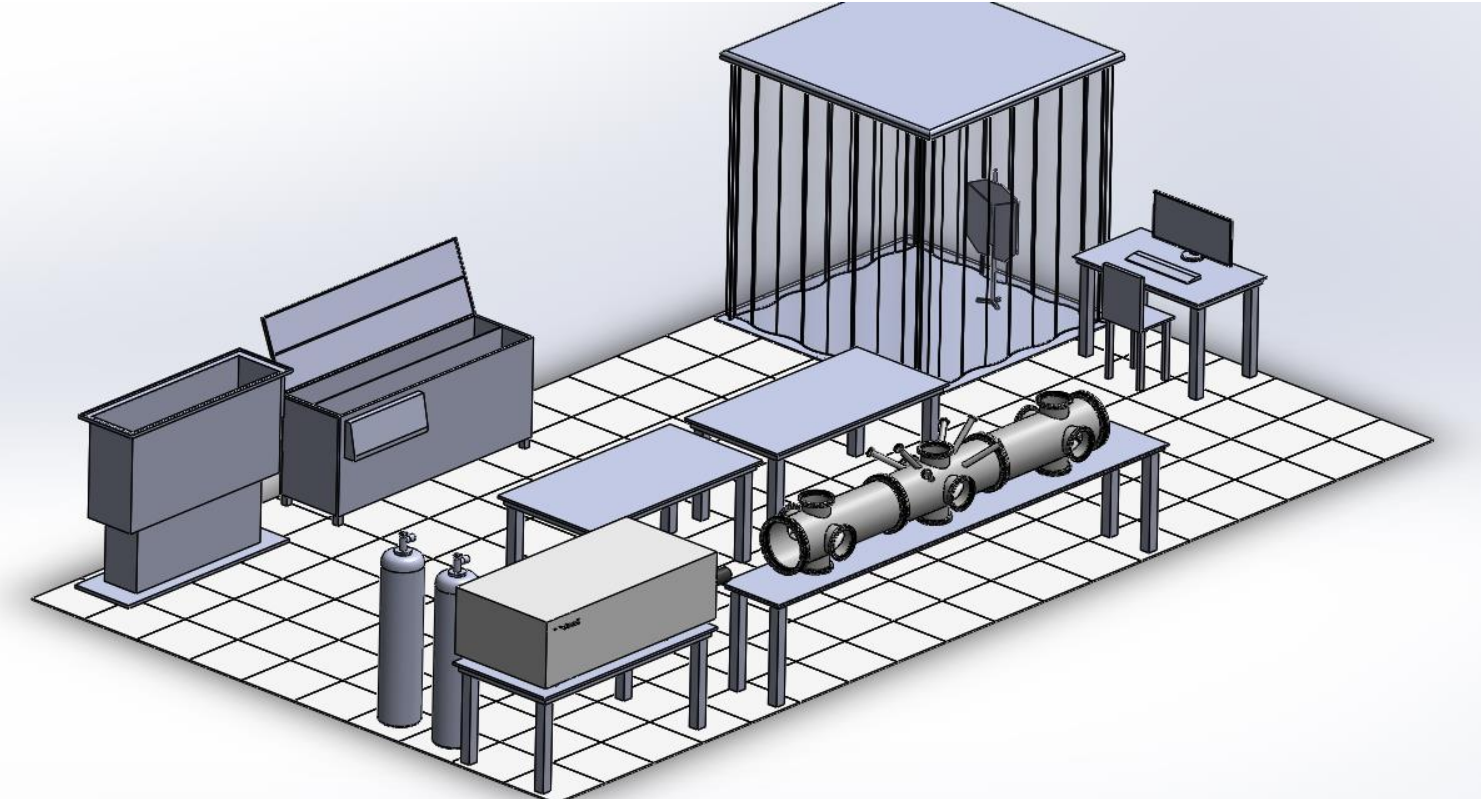


Ag on glass

# Center for Advanced Coatings at UWinnipeg

**Versatile Coating Chamber: Focused on nEDM cell geometry + Polarization Preserving warm guides.**

- Nominally designed for pulsed laser deposition.



Target coatings:

- NiMo (215 neV)
- Ni<sub>58</sub>Mo
- Ni (250 neV)
- High diamond content DLC (230-270 neV)
- B<sub>11</sub>N (300 neV) and is an insulator 😊

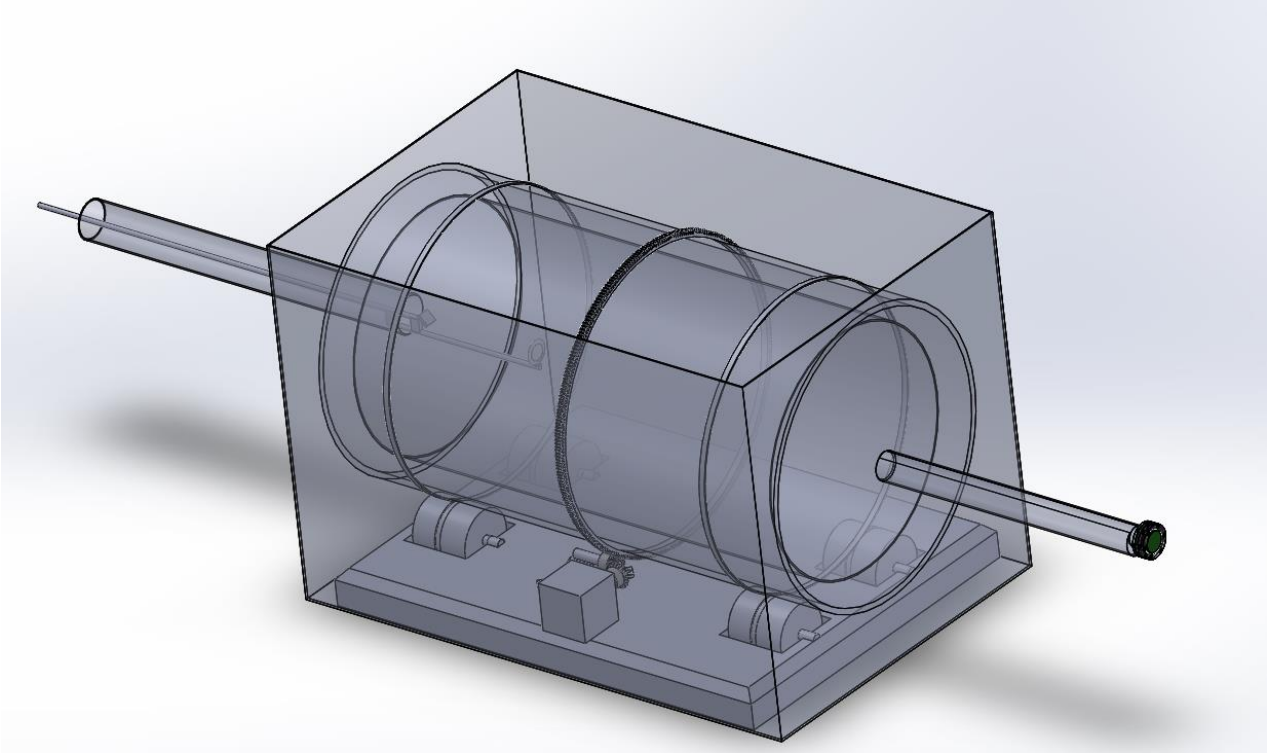
<https://doi.org/10.1016/j.nima.2009.12.035>

+ a separate nEDM Cell coating chamber (coat a tube 20" dia x 20 long)

- Talked with Cam in June... Move target not substrate

Also, 1J/pulse 248 nm Laser price increased (300k to 400k) ☹️

This allows the focal length (lens) to be closer to the target---which allows a tighter laser spot size (by a factor of 10)  
It is the Laser energy/area that is required. So with a tighter spot size, can afford a cheaper laser 0.7 J/pulse 248 nm ~\$150-200K



Large diameters up to 500 mm diameter no problem.  
85mm ID tubes can be done, 76mm ID could be challenging  
Up to 1 meter long

Still working on concept.

Estimated Budget	
Component	Cost (kCAD)
Excimer Laser	175
Chamber	90
Internals	50
softwall cleanroom	50
safety/tables	50
cleaning	50
profilometer	35
<b>total</b>	<b>500</b>