8inch MCP vacuum coating system at Fermilab status update

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NiCr “electroding” of 33mmDIA MCPs at Lab 7

- Have coated more than 120 of the 33mm disks to date
- Resistive evaporation of NiCr 80/20 (99% pure) in W boat
- Vacuum low -6 to high -7 TORR achieved with overnight pump
- 151l/s molecular turbo pump & dual rotary vane roughing pump
- Coating current 250Amps
- Actual evaporation time <20 minutes
- Rotation speed 30rpm
- Direct geometry rotation distance is 18 inches from boat to center of holding plate
- Quartz crystal thickness and rate monitoring
Internal parts completed
Copper electrical feeds installed
Holder Plate completed, cleaned, and motor mounted

- UHV stepper motor VSS 57.200.2.5 VG 8:1 ratio - 4 leads
Safety Retainer designed, fabricated & installed

Safety retainer & spacer for bushing clamp installed on motor shaft
Holder plate and MCP base fixture assembled

Everything fits!!!
Motor Assembly and Holding Plate in-situ

Assembly with MCP base fixture

Assembly with MCP frame & glass

6 speed choices-1 rpm, 3 rpm, 5 rpm, 10 rpm, 15 rpm, 30 rpm & an analog dial
Total view of system with top bell open for mounting MCP frame
Tasks still to complete

• Complete installation of internal motor wiring

• Testing of motor rotation & adjustment of voltage inputs (controller was set up with another motor)

• Testing of coating on several 8 inch glass substrates to fine tune operation (initial tests to be at ~6 rpm)
8inch MCP coating system specs

• Total height of 8 port MDC collar plus Fermilab fabricated “extension collar” plus 30”MDC bell jar = 65 inches

• Internal working diameter = 17 inches

• Volume of chamber ~ 10 cubic feet

• Distance from boat to substrate center = 51 inches
Concerns in production

• Small screws that clamp MCP frame to MCP base fixture-close attention needed to prevent screws falling out. Review design of capturing the frame.
Potential schedule of commitment and rate for production of 8inch MCPs “electroded”

- January 2012
- 1 MCP per week
- Training 2 other persons to perform coating-install MCPs-monitor system
- Under current setup-potential output can be 5 MCPs every 2 weeks.