
 NUS National University of Singapore  CIBA Faculty of Science, Dept of Physic , Centre of Ion Beam Applications	Procedure No:	CIBA/SOP/Eq /007
Title: Buehler Metaserv 2000 and 3000 grinding and polishing machines.	Rev No:	002
	Issue Date:	31 Oct 2011
	Page:	Page 1 of 2
Prepared by: Dr Sudheer/Malli/SongJiao/ZhiYa	Approved by: Asst/Prof Andrew Bettiol	Review Date: 02 Nov 2011

1. OBJECTIVE

Grinding and polishing of silicon, polymer and metallic structures using Buehler Metaserv 2000 and 3000.

2. SCOPE

This SOP is applicable to all researchers, graduate students, and personnel on attachment and Lab staff.

3. RESPONSIBILITY

Principal Investigator

It is the responsibility of the principal investigator (PI) in conjunction with the laboratory supervisor to ensure that the users are trained properly before operating the machine.

Staff/ Research personnel

- a. Users shall attend appropriate training on the safe use of the machine.
- b. Users shall report any injuries, defects or breakdowns to their supervisor.



4. PROCEDURES

Coarse polishing with the Autopol Metaserv 2000.

- 4.1 Stick the 2400 SiC polishing pad onto the Al platen with a bit of water.
- 4.2 Clamp it down with the retaining rings.
- 4.3 Turn on the running tap and switch on the machine.
- 4.4 Load in the sample into the specimen holder.
- 4.5 Polish for 2min and rotate the sample 180° and polish for another 2 min.
- 4.6 At this point, you should see the facet of the sample under the microscope.
- 4.7 Change to 4000 SiC polishing pad and polish for 5 min, rotate and polish for another 5 min.
- 4.8 Observe under microscope and you should see the structures. If not, continue with the polishing.

Fine polishing with Vector Powerhead Metaserv 3000.

- 4.9 Attach the frosted glass platen onto the Al platen using black tape.
- 4.10 Stick the 3µm Buehler fibremet disc onto the frosted glass platen and clamp it with retaining rings.
- 4.11 Polish for 10-30 min, repeat again after rotating the sample 180°.
- 4.12 Change to 1µm Buehler fibremet disc.

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- 4.13 Polish for 10-20 min, repeat again after rotating the sample 180°.
- 4.14 By then, you should see a mirror-like finishing on your waveguide, or structures.

5. SAFETY PRECAUTIONS

- 5.1 Make sure the water is running during polishing as the particulates can be washed down the drainage.
- 5.2 Make sure your hands are dry when switching on and off the main switch of the machine.
- 5.3 Make sure your hair is out of the way of the polishing machine.

5 References:

Manuals are kept in the shelves next to the polishing machines.

6 Appendix:

Nil