Standard Operating Procedure

Vibromet I Vibratory Polisher

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| **Department:** | Earth and Environmental Sciences |
| **Date SOP was written:** | 1/17/2018 |
| **Date SOP was approved by PI/lab supervisor:** | 1/17/2018 |
| **Principal Investigator:** | Guil Gualda |
| **Internal Lab Safety Coordinator/Lab Manager:** | Richard Bradshaw |
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| **Location(s) covered by this SOP:** | *SC 5730B* |
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**Personal Protective Equipment (PPE)**

**Eye/Hearing Protection:**

**Other Protection:**

Pull long hair back

No loose clothing

**NOTE:** Reading this SOP does not give you permission to use this polisher, you MUST be trained by the Lab Manager on the proper use. This SOP is meant as a reminder of the procedure and safety information, not a comprehensive set of instructions.

This polisher is generally used as the final polishing step for samples where the polished surface needs to be free of defects, generally for EBSD analysis.

**Important:**

Be sure to clean your sample thoroughly before using this polisher to avoid contamination of the pad



**Procedure:**

Preparation

* Make sure all the parts of the polisher are clean and dry
* Make sure your sample is clean
* Assemble the polisher
  + The drive plate, which has the polishing pad, needs to be placed on the machine and secured with the 4 bolts
  + The clamping ring is then placed on top of the pad and secured to the drive plate with the 6 hand turned bolts
* Prepare your samples
  + For 1” round samples
    - place your mount face down in the appropriate slot on the loading fixture (The disk with 3 round indentations, located in the drawer below the polisher)
    - Place a sample holder on the loading fixture around your sample
    - Tighten the set screw in the sample holder using an allen wrench
  + For thin sections
    - There are 3 thin section holders in the drawer
    - Use double sided tape to secure your thin section to the sample holder
  + For some applications you might want to add weight to the sample holder
    - Screw a weight shaft into the threaded hole on the top of the sample holder
    - Slip the required weights on the shaft
    - Generally 0 to 1 weight is sufficient for this final polishing step
* Apply the polishing solution
  + Moisten the polishing cloth with DI water before applying the polishing solution
  + Apply enough polishing solution (Master Prep Polishing Suspension, 0.05 μm) so there will be complete coverage once it is redistributed
  + Use one of your samples to manually redistribute the polishing solution over the pad
* Start the polisher
  + Place the dust cover on top of the polisher
  + Switch the power switch to ON
  + Adjust the vibration amplitude using the speed control knob on the right until the samples make ~6 revolution per minute (#2 on the speed control dial is a good starting point)
* Polishing time
  + Generally, samples should be polished for >1 hour

Finishing up

* Remove your samples from the sample holders
* Remove the clamping ring and drive plate
* Thoroughly clean the following
  + Your samples
  + All sample holders used
  + The clamping ring and all 6 bolts
  + Lightly rinse the polishing pad and drive plate
  + Wipe down the dust cover, inside and out
* Leave everything out to dry
* Come back after everything is dry and place everything back on the polisher with the dust cover on to avoid dust contamination on the pad