

# Dimpler

Dimpler is an indispensable tool for TEM specimen preparation. The dimpling technique, which is applicable to a myriad of material types, yields a higher quality specimen with a broader, near electron transparent area which reduces ion milling times.

## Dimpler – Operating Procedure

1. Set counter-weight load at 20 gm (zero of circular scale should coincide with main scale)
2. Carefully raise the Cam and platform (pivot Arm)
3. Stick the sample with wax on the specimen Stub and mount in magnetic ring
4. Align the sample at centre (using microscope)
5. Lower the pivot Arm and Lower Cam notch to front side.
6. Lower Micrometre Drive (clockwise) completely
7. Rotate Micrometer Drive anti-clockwise until the dial indicator needle rotates for one complete turn and just reaches zero.
8. Press the 'Zero' button
9. Rotate Micrometer Drive clockwise until display shows required thickness to be dimpled (60 $\mu$ m)
10. Raise Cam and pivot Arm
11. Place a small amount of diamond paste on the specimen and moisten with a drop of water
12. Lower the pivot Arm and Cam; set rotation speed at 3 rpm
13. Press 'Auto'
14. Press 'Table' and 'Arm'
15. After dimpling is complete, the 'Table' and 'Arm' motors stop automatically
16. Raise Cam and platform (Pivot Arm) without disturbing the micrometer driver.
17. After dimpling is done and the sample thickness (at the centre) reaches 20 $\mu$ m, remove the dimpling wheel, clean it with acetone and replace it with a felt assembly (Use different felts for different specimens, depending upon the hardness of specimen)
18. Clean the diamond paste on specimen stage with water. Finally clean the surface of the stage with little acetone but remember not to disturb the position of sample
19. Apply 2-3 drops of alumina suspension with 1 drop of water on the specimen
20. Lower the platform and Cam
21. Set counter-weight load at 30 gm for semiconductors (40gm for harder materials like diamond, sapphire etc.)
22. Don't disturb Micrometer Drive, which is at some height after dimpling of 60 $\mu$ m. Pointer points at zero
23. Set rotation speed to 6 rpm
24. Press 'Table' and 'Arm' and continue for 2-4 minutes
25. Stop 'Table' and 'Arm'

26. Check the sample under microscope
27. Raise Lower Cam and platform and remove the sample from the specimen mount
28. Clean specimen stage with water and also clean the sample with acetone only.
29. Polishing using felt reduces the thickness of the sample (at the centre) further by  $3\mu\text{m}$ , so that the final thickness of the sample (at the centre) is  $17\mu\text{m}$

After completion of dimpling of your samples alumina polishing is mandatory.  
Without alumina polishing diamond paste is not removed from your samples which contaminate the guns of PIPS.