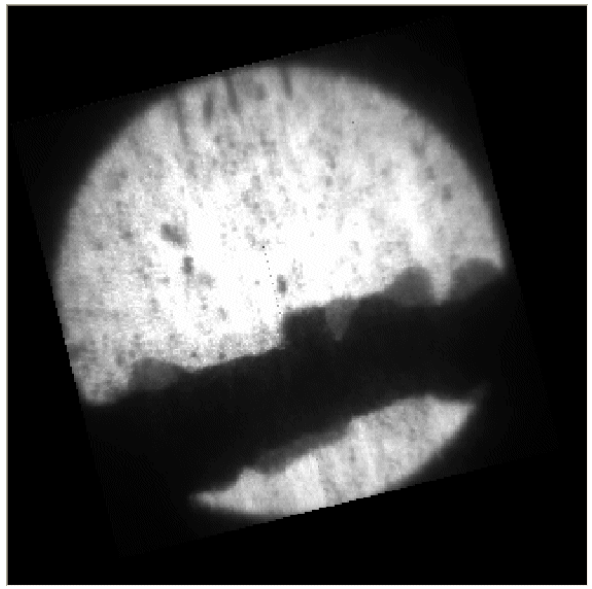
Optical Diagnostics

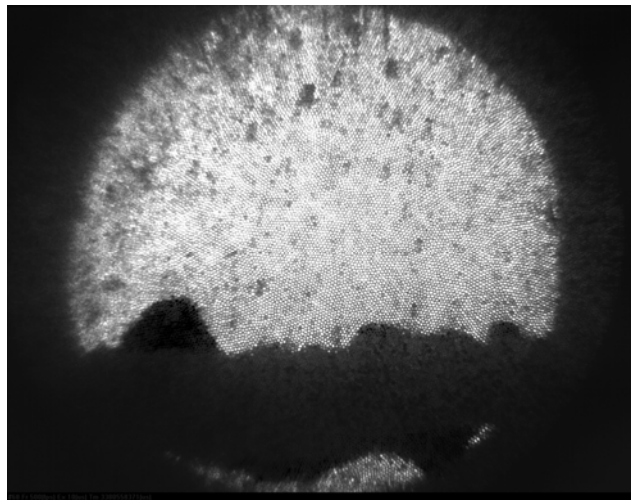
March 7, 2007

HeeJin Park

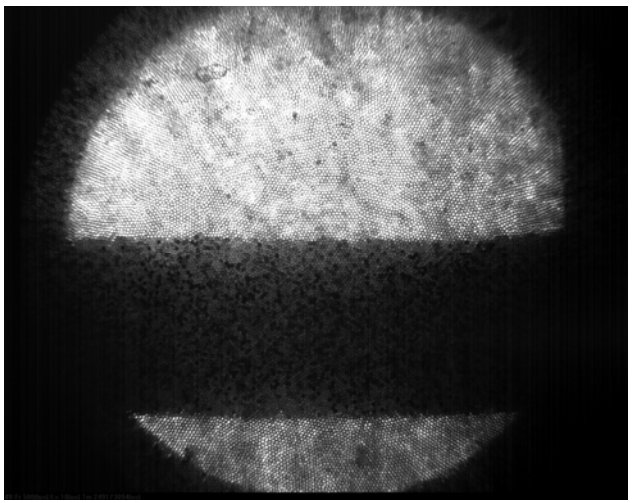
Images of Mercury Jet vs. Magnetic Field (V=10m/s)

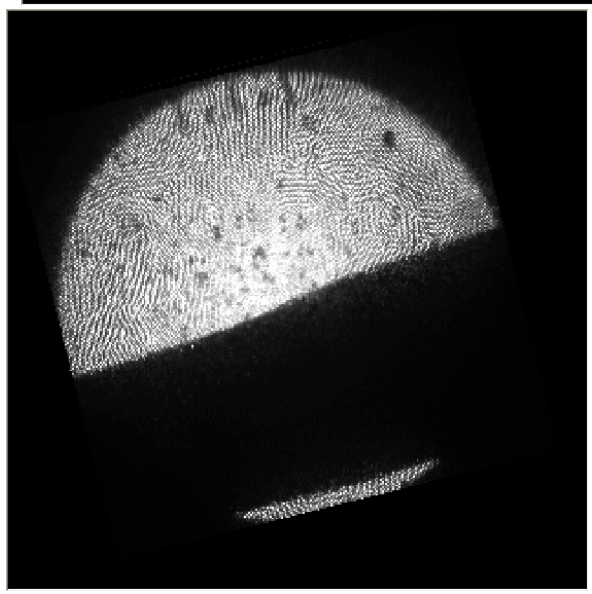
0 T

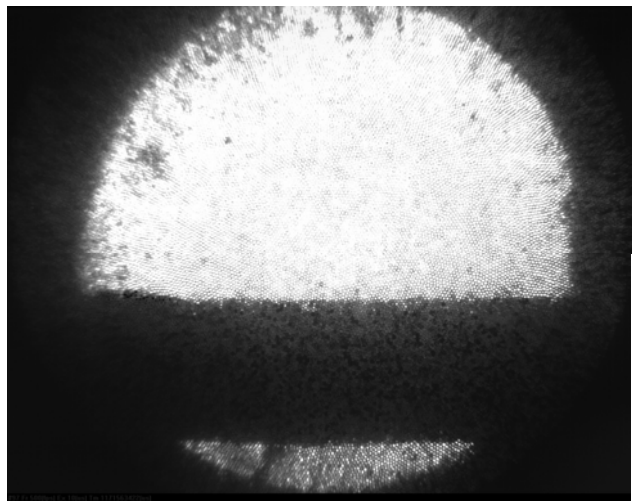




15 T

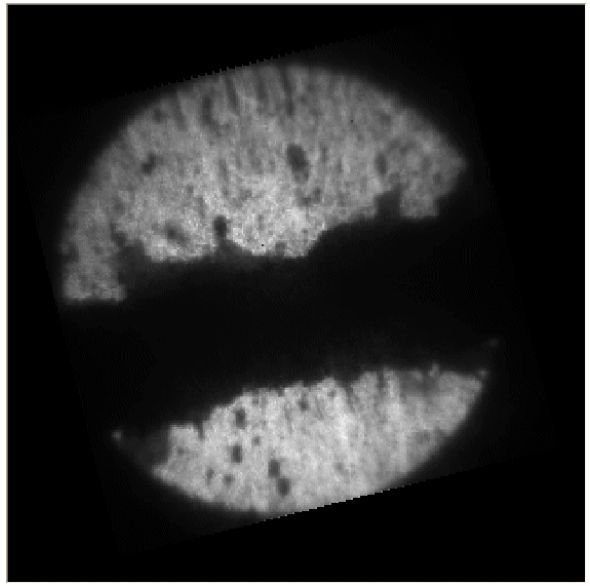


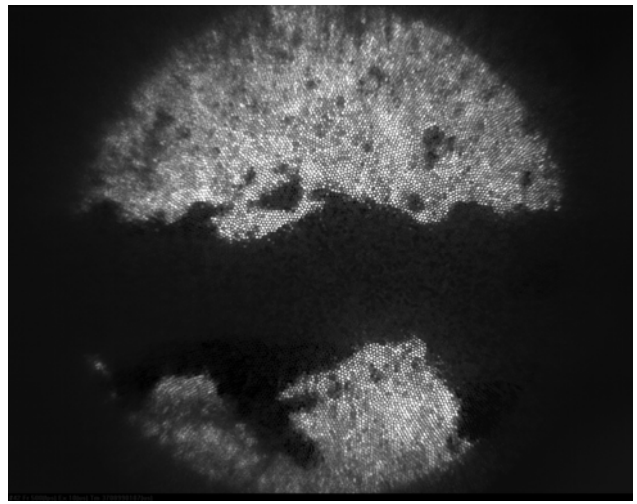




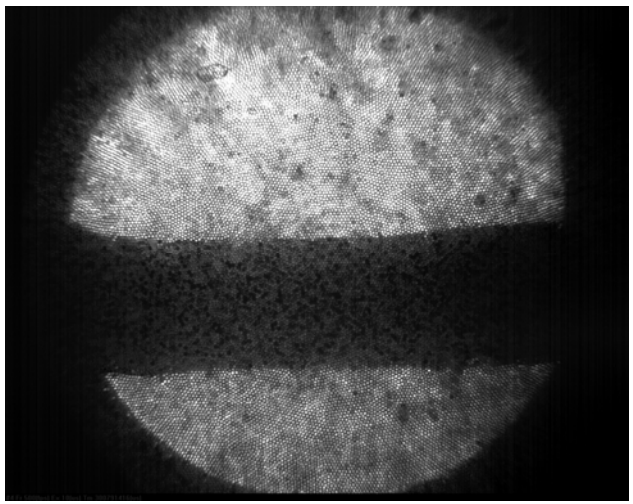
Images of Mercury Jet vs. Magnetic Field (V=15m/s)

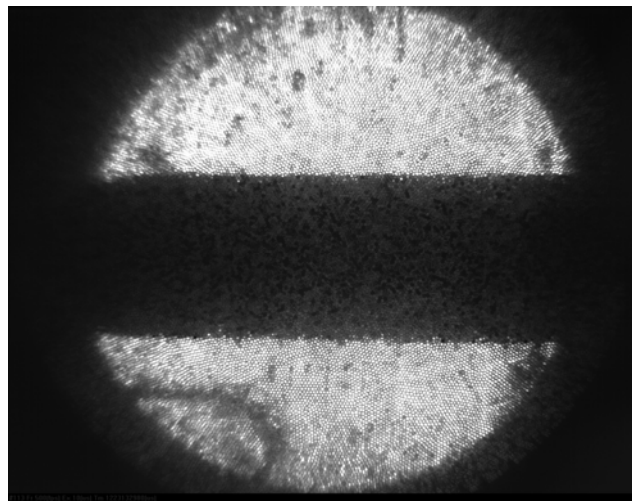
0 T





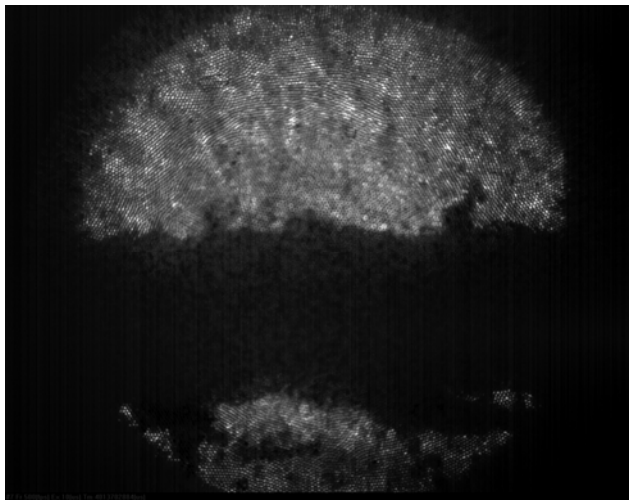
15 T

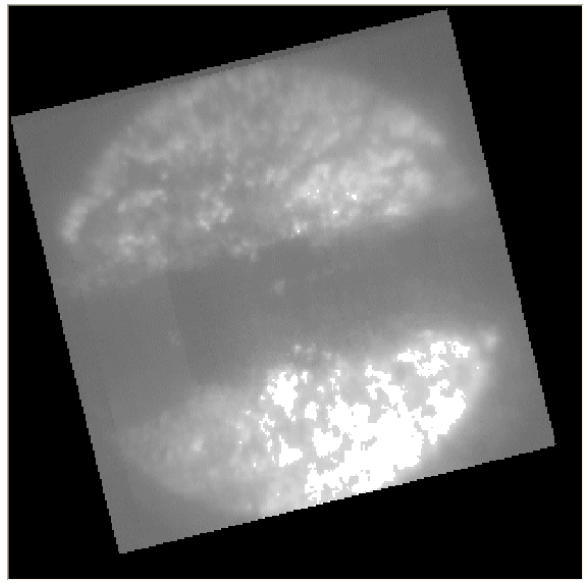


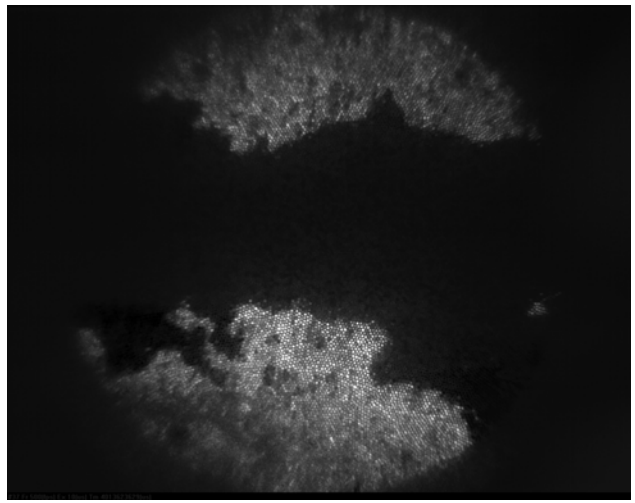


Images of Mercury Jet vs. Magnetic Field (V=20m/s)

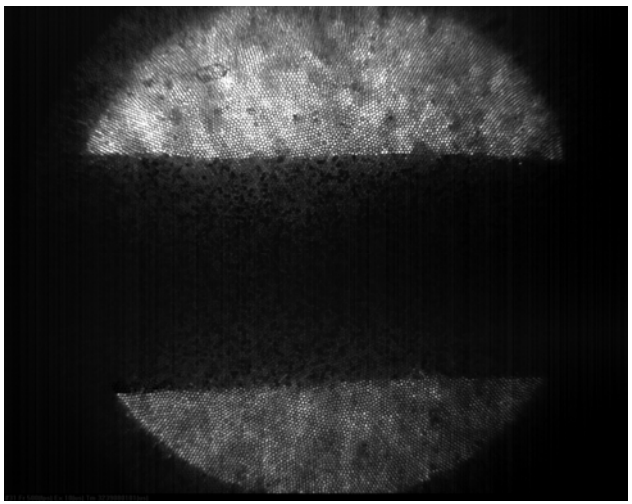
0 T

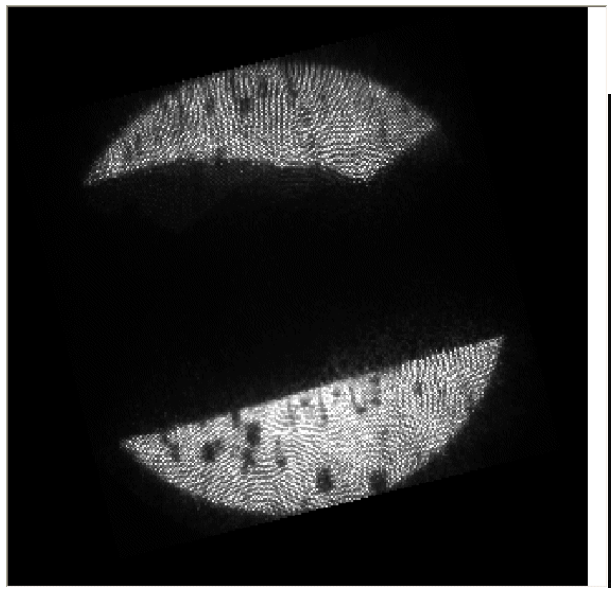


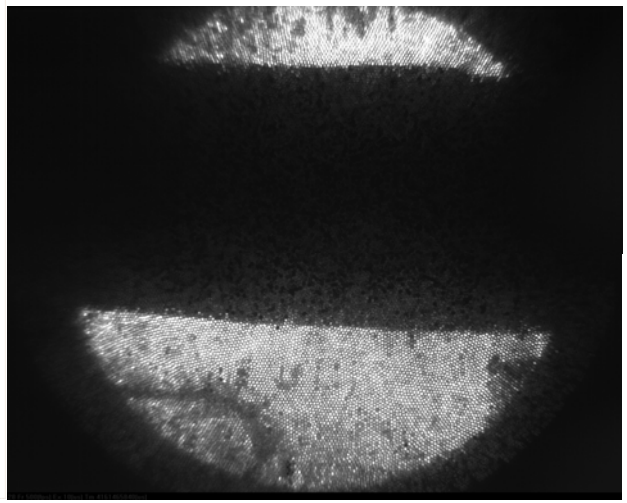




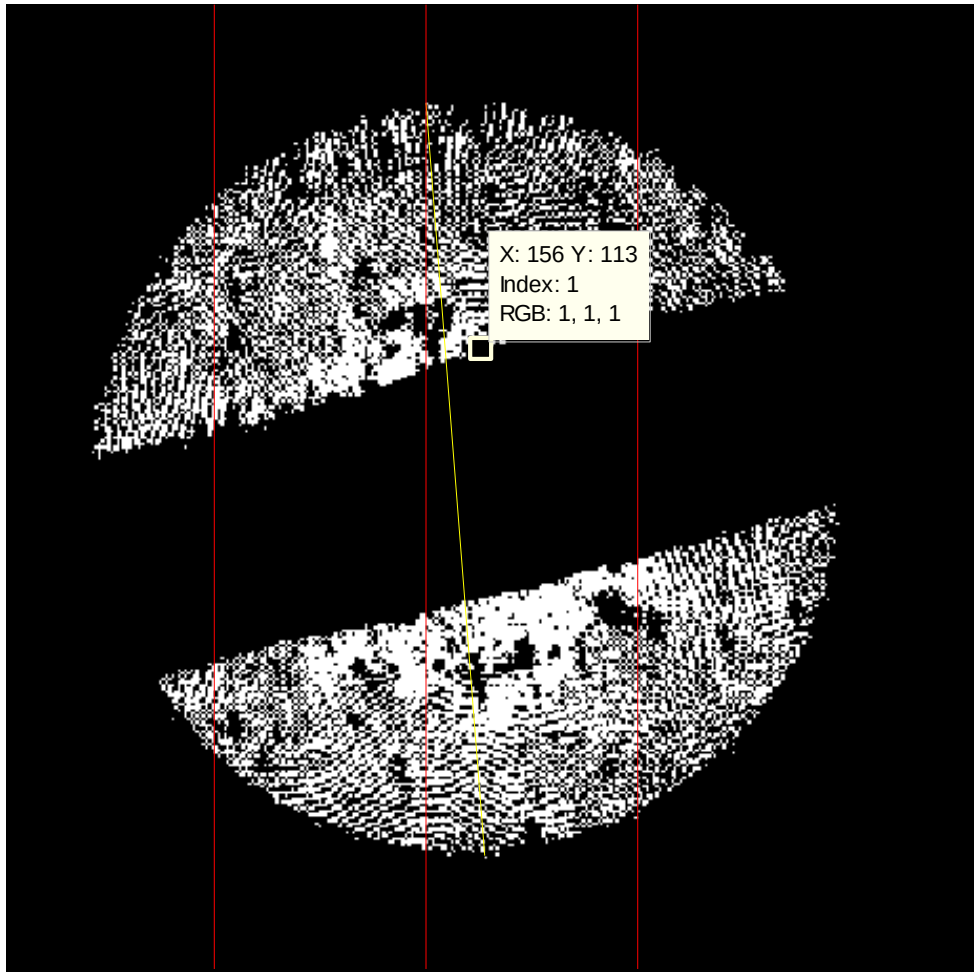
15 T



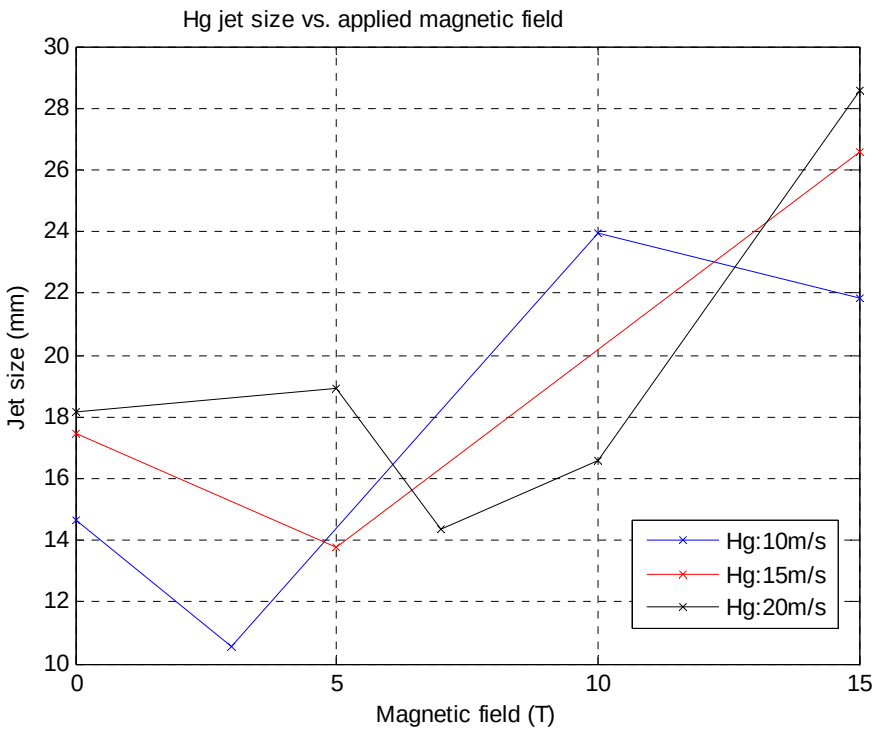


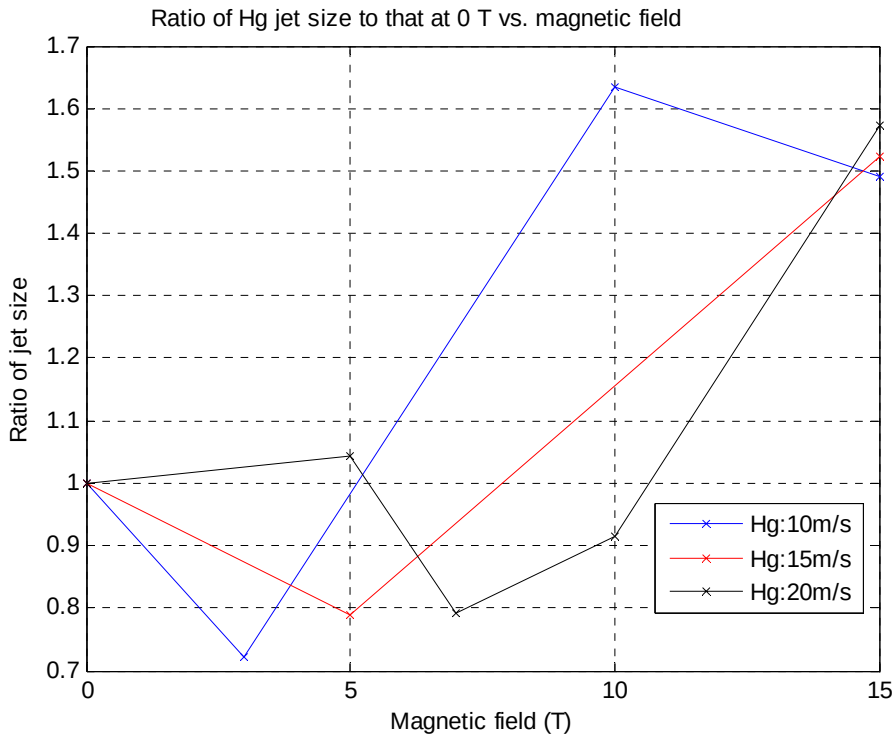


TIF Image Processing For Analysis

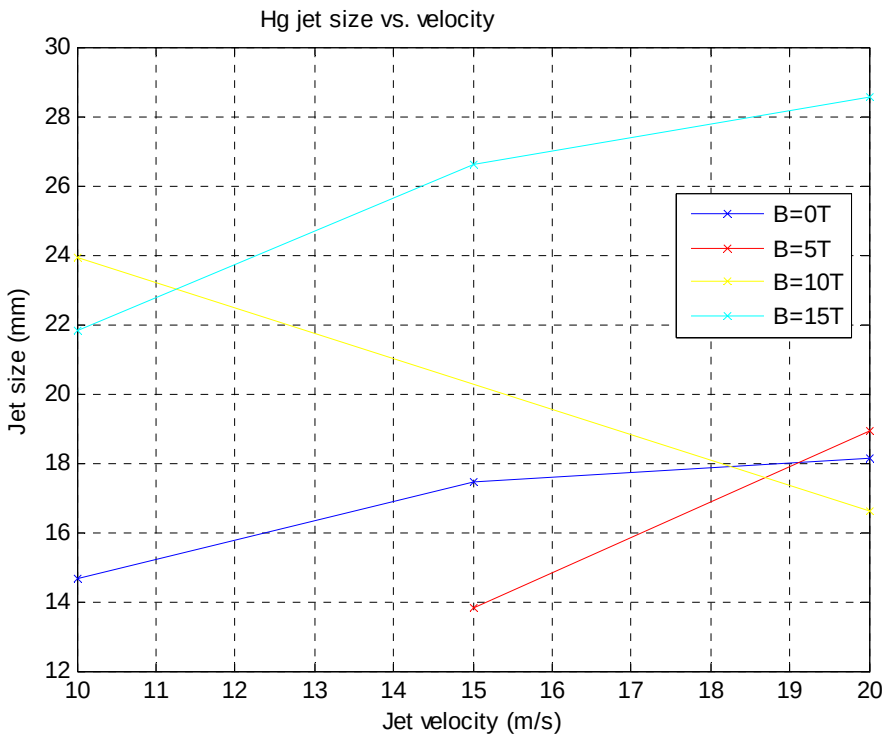


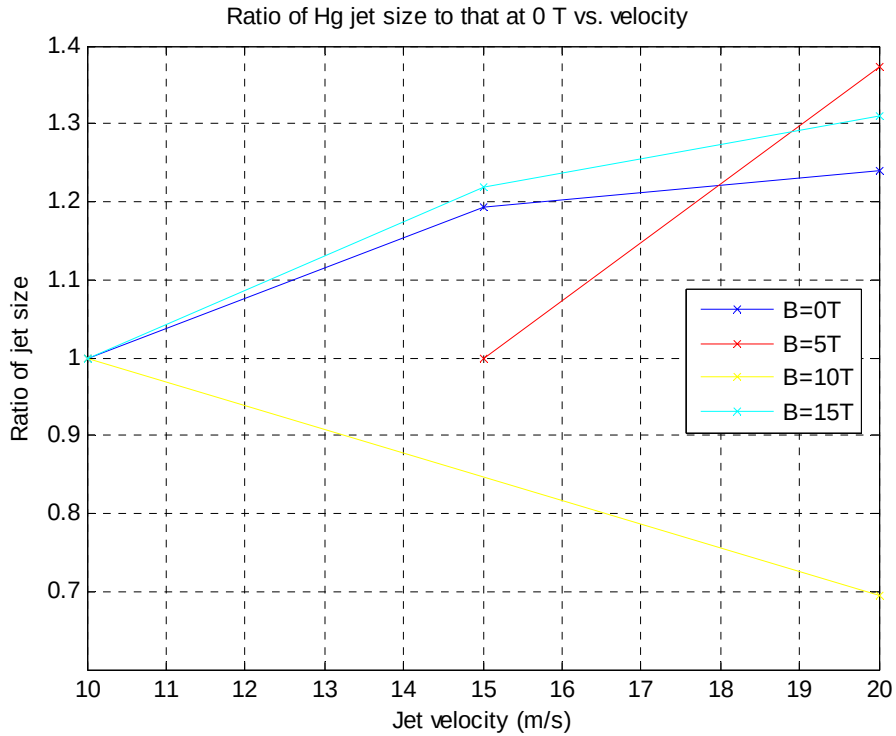
Hg Jet Size at Viewport 2



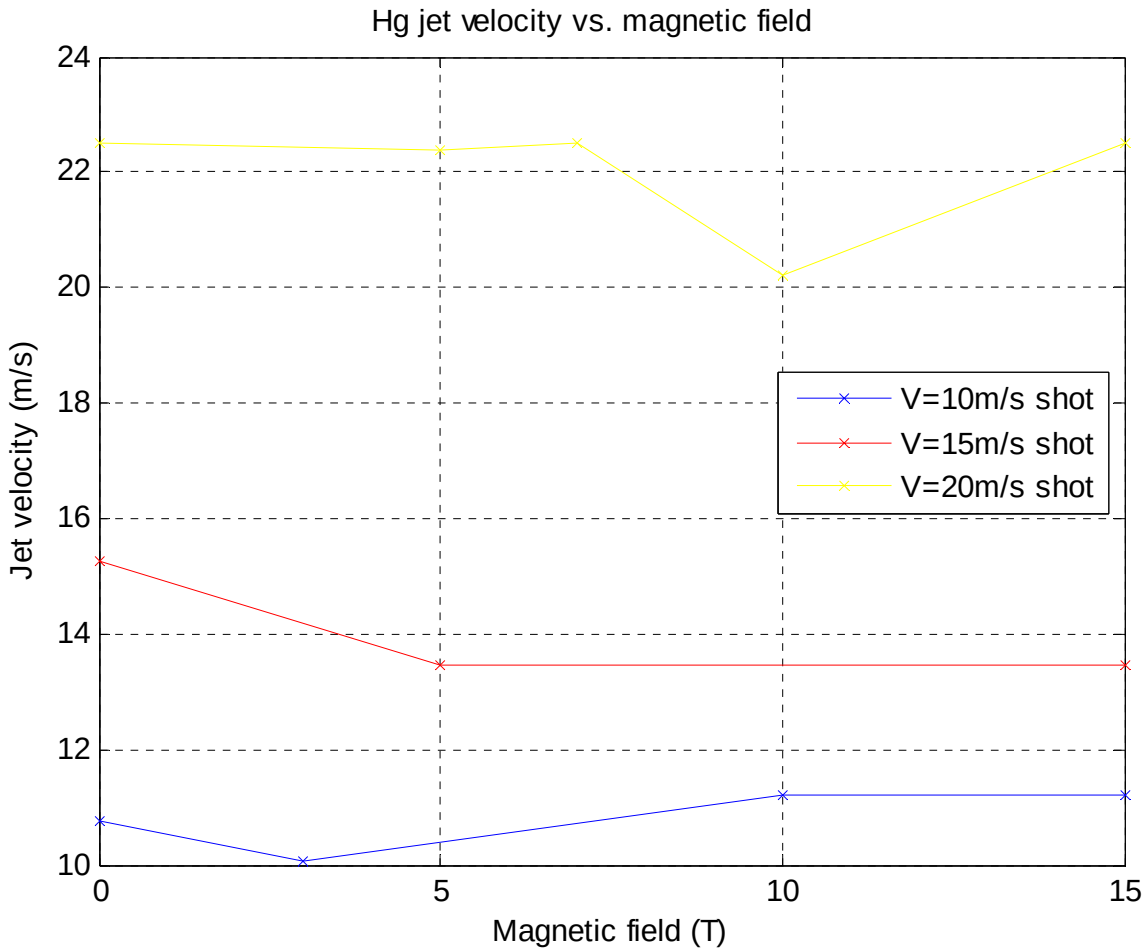


Hg Jet Size at Viewport 2 (cont'd)





Hg Jet Velocity vs. Magnetic Field



Conclusions

1. Magnetohydrodynamic motion of Hg jet was observed at viewports 1,2,3 and was measured at viewport 2.

2. The size of Hg jet increased as the jet velocity increased.

3. The size of Hg jet was roughly the same at 0 and 5 T, and then increased at higher magnetic field. The increase in jet size from 5 to 15 T was larger than the increase in size from v = 10 to 20 m/s.

4. Jet breakup was observed downstream at zero magnetic field.
   Jet breakup was not observed when magnetic field was applied but some surface disturbance was still present.

5. The jet velocity was independent of magnetic field.

6. At nonzero magnetic field, the bottom of the jet was smoother than the top.was
   The surface perturbations were more prominent at low magnetic field, but still present at 15 T.