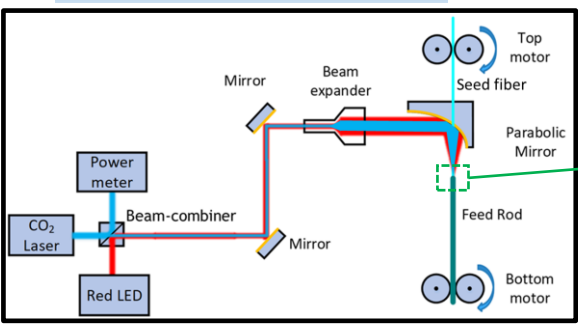


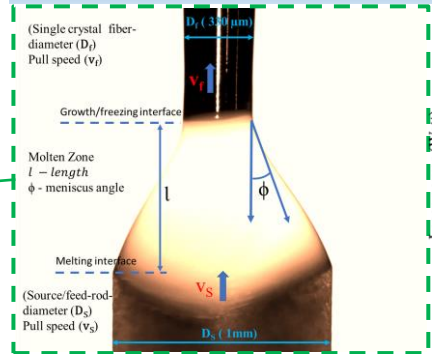


Single crystal fiber growth via LHPG method for harsh environment sensing applications

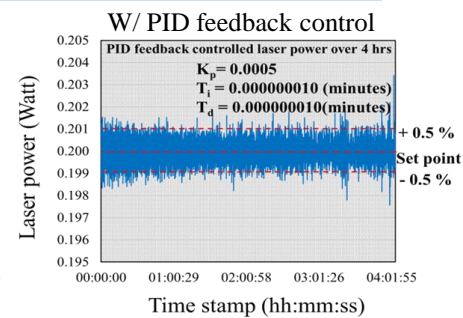
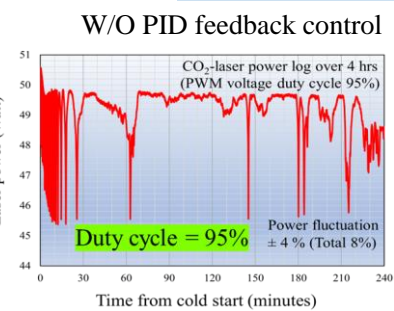
LHPG set up at UPitt



Molten-zone thermodynamics

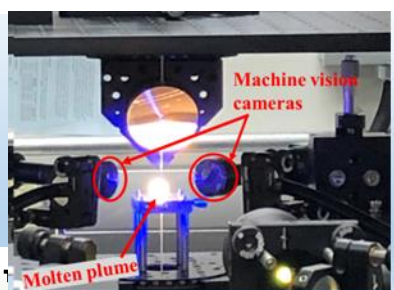


Laser power control (PID feedback loop)

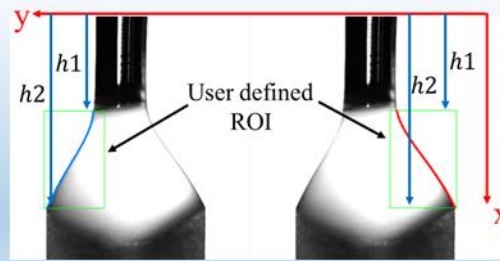


LabVIEW machine vision based in-situ

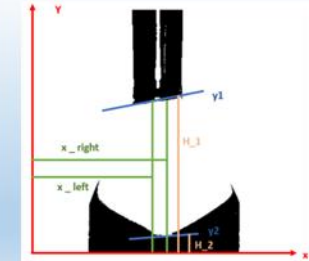
- ❖ Diameter tracking and measurement
- ❖ In-situ molten zone contour tracking and volume estimation
- ❖ Molten zone height/length tracking and measurement



Molten zone volume monitoring

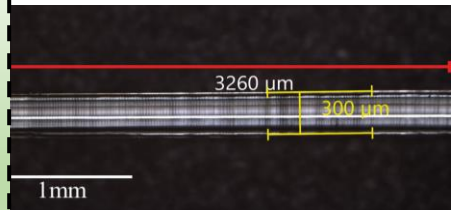


Molten zone height monitoring



- Versatility in melting/growing refractory oxides **sapphire, YAG, MO-oxides (YIG/TGG), EO-oxides (LN, BaTiO3), ... (melting point up to 3000°C)**
- Crucible free, Purity, diameter < 100 micrometers
- **High temperature (>2000°C) sensing**
- **Radiation sensing**
- **EM field sensing**
- **Harsh chemical environment sensing**

Sapphire-fiber grown at UPitt



YIG -fiber grown at UPitt



TGG -fiber grown at UPitt

