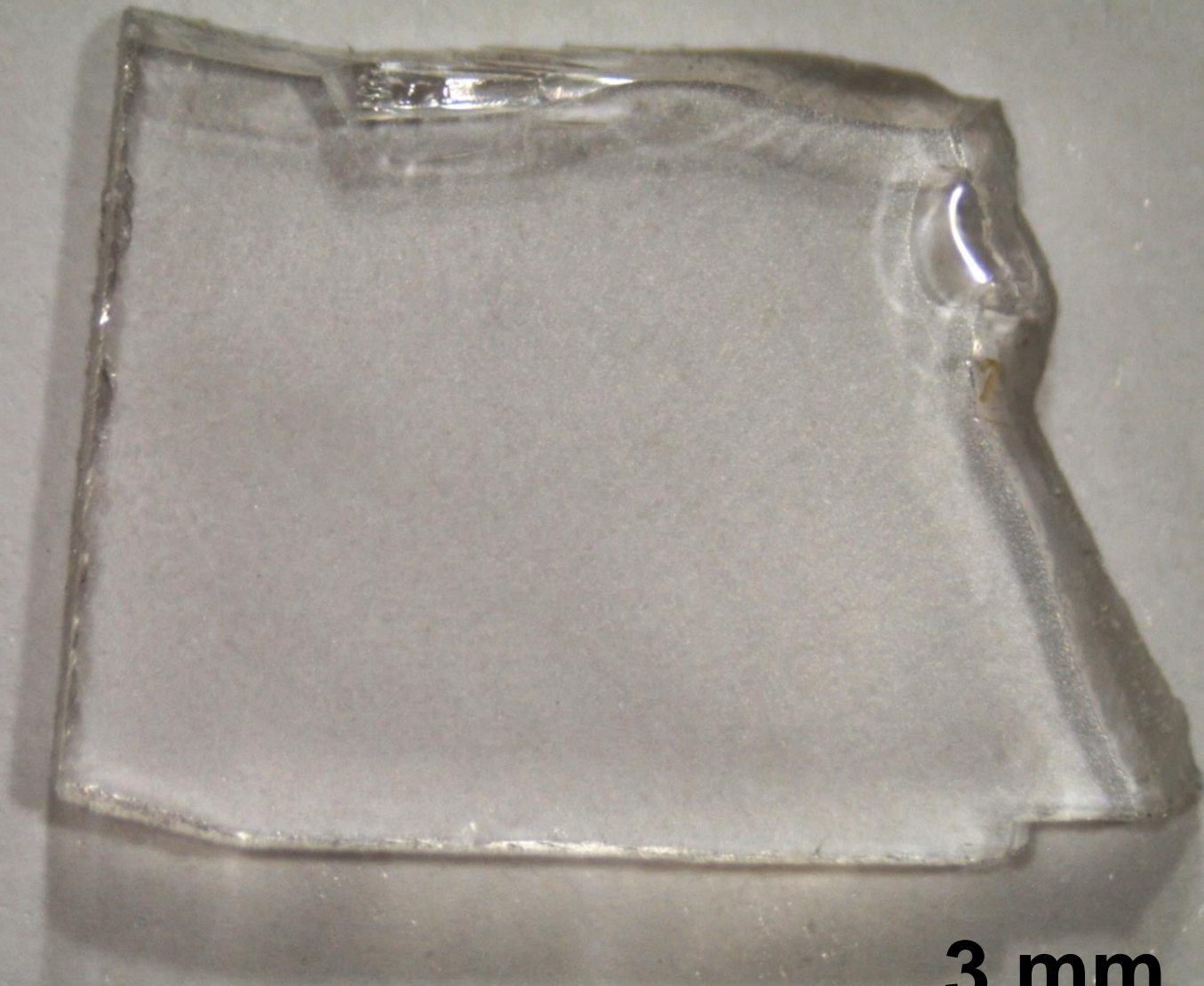


**Appendix Figure 1A.** Post-experimental images of polished slabs used during heating experiments. Some slabs experienced failed gas conditions only on the last heating step that caused corrosion effects. Experimental failure on the last heating step is noted in each image along with the temperature and gas conditions, slab orientation, and slab thickness. The polished slab of 0.390 mm thickness at 900°C and FMQ conditions experienced noticeable pitting after the last failed heating step. The 0.290 mm polished slab at 900°C and FMQ also experienced some corrosion and pitting upon failure. The 0.532 mm slab heated under the same conditions, but without a failed heating step, is free of these pitting features. This indicates that the surface pitting occurred during the gas failure. The only other slab with an observed surface pit is the 1000°C 1.083 mm slab run in air for a cumulative heating time of 1130 hours, or 47 days. The polished finish along the edges of some slabs was rougher than in the center. The roughly polished areas were more likely to appear cloudy through longer heating steps (e.g., 1000°C N<sub>2</sub> 0.311 mm). These features as well as fractures were avoided during FTIR measurements. (Scroll down to see Figures.)

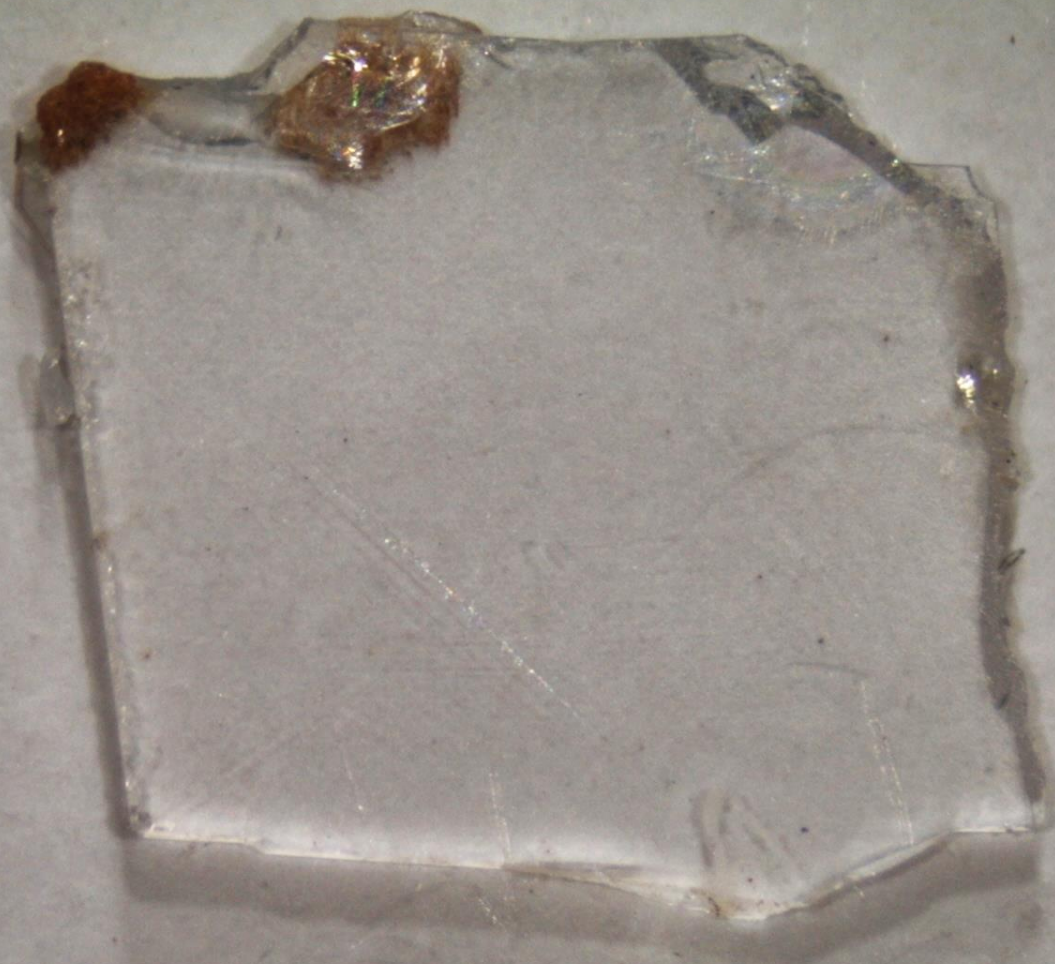
Johnson and Rossman: Diffusion of hydrogen in plagioclase; AM-13-1013  
American Mineralogist



**3 mm**

800°C N<sub>2</sub>  $\perp$ (010) 0.625 mm

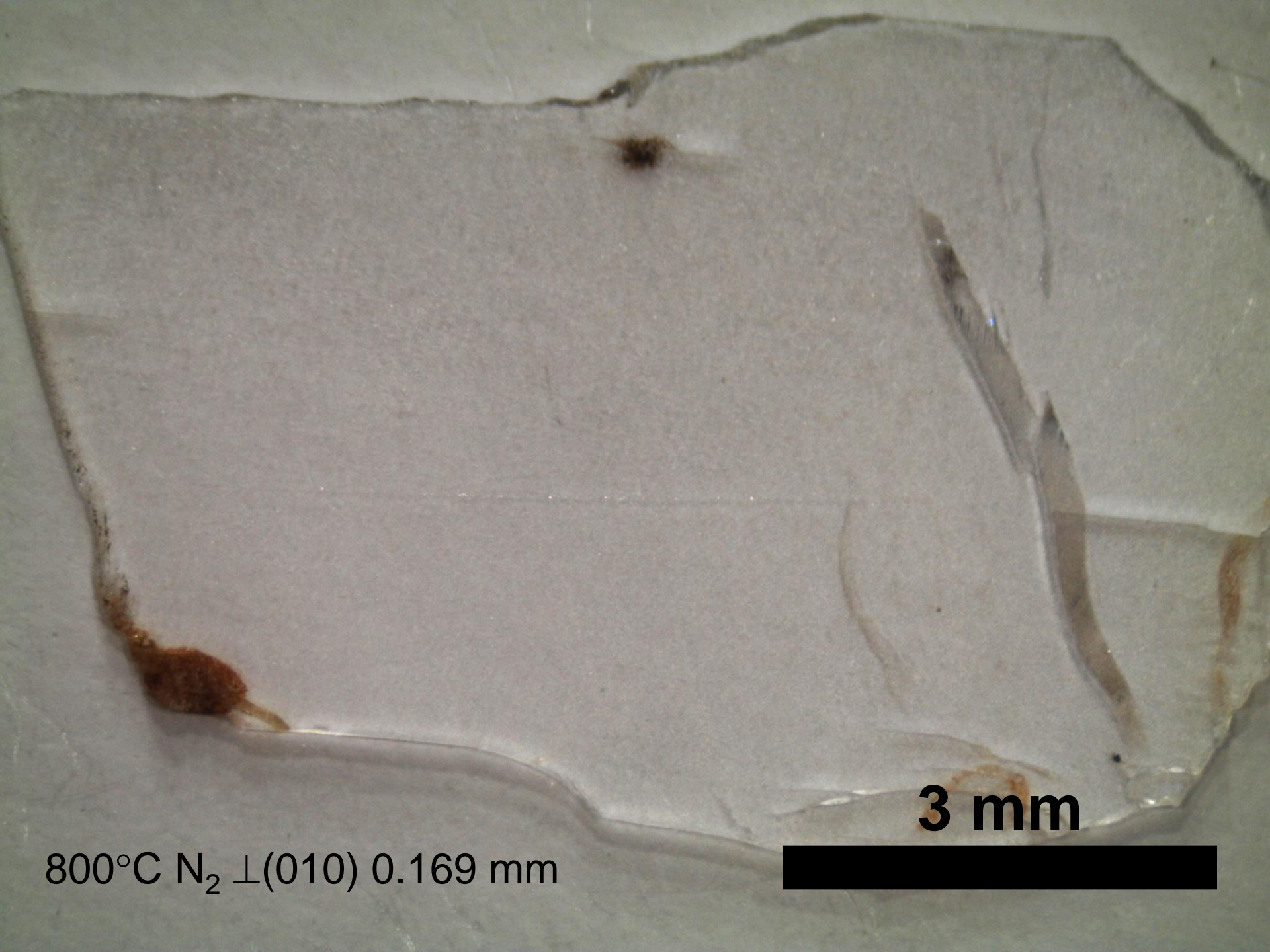
Last heating step failed



**3 mm**

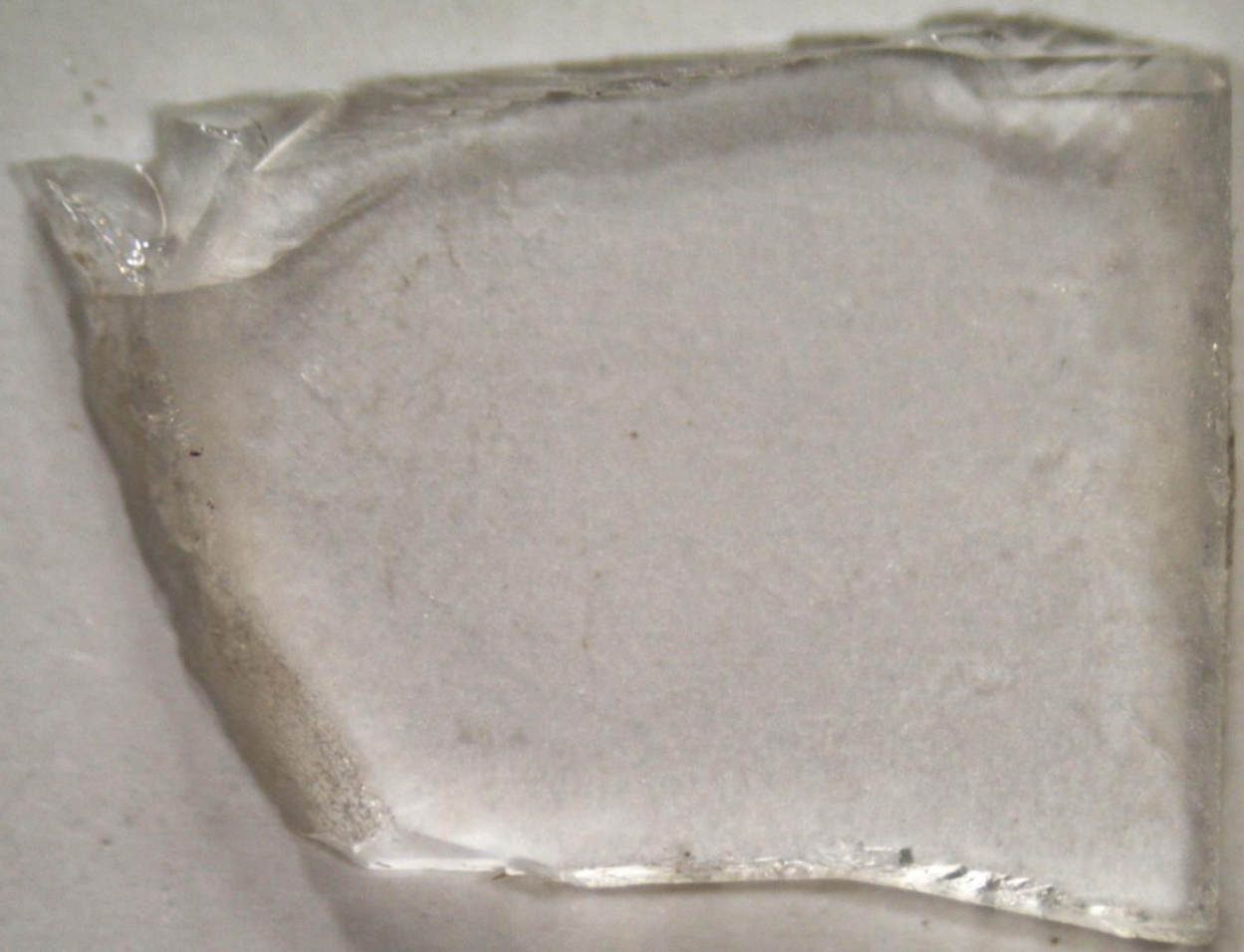
800°C N<sub>2</sub> ||(010) 0.300 mm

Last heating step failed



**3 mm**

800°C N<sub>2</sub> ⊥(010) 0.169 mm



**3 mm**

900°C N<sub>2</sub>  $\perp$ (010) 0.644 mm

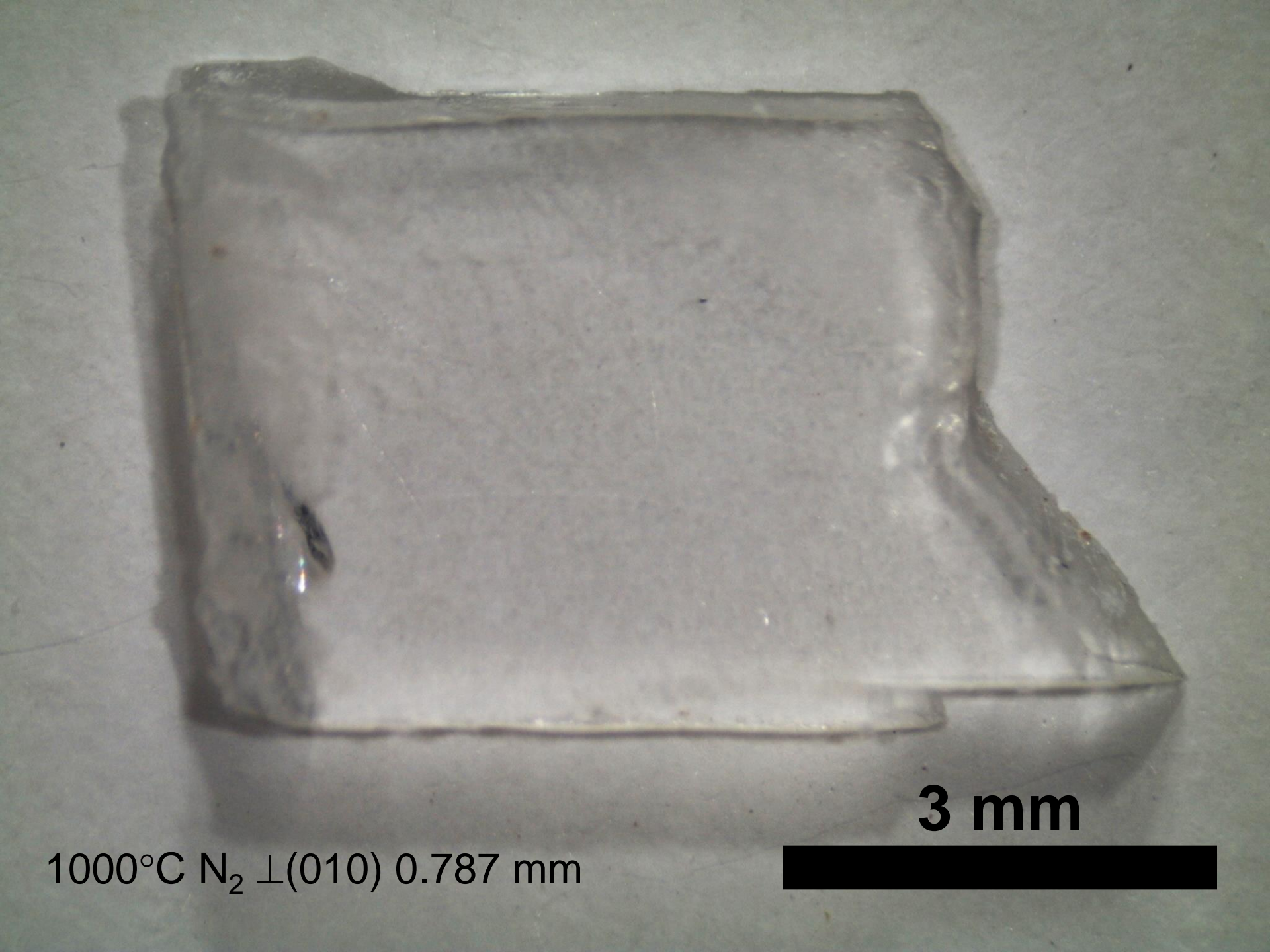
Last heating step failed



**3 mm**

900°C N<sub>2</sub> ||(010) 0.521 mm

Last heating step failed



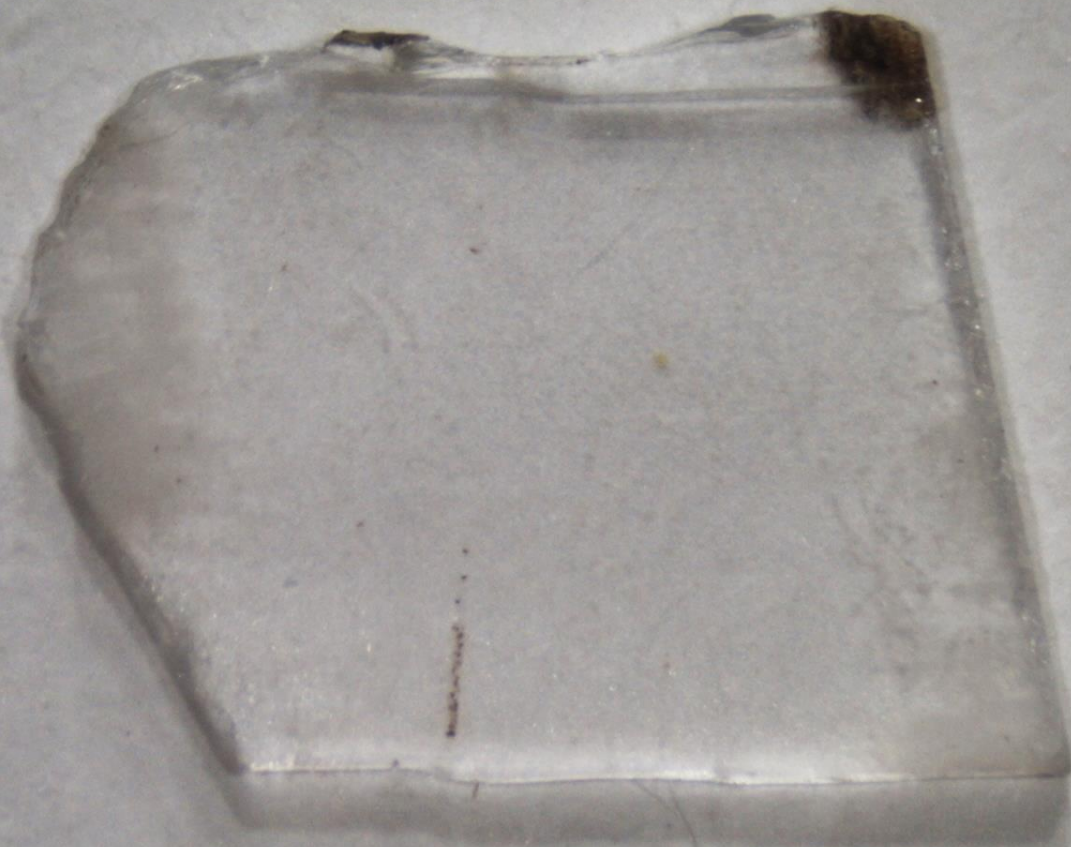
**3 mm**

1000°C N<sub>2</sub> ⊥(010) 0.787 mm



**3 mm**

1000°C N<sub>2</sub> ||(010) 0.499 mm



**3 mm**

1000°C N<sub>2</sub> ||(010) 0.311 mm

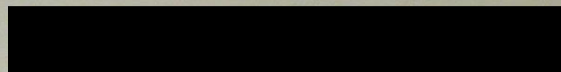
900°C air  $\perp(010)$  0.806 mm

**3 mm**



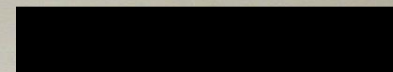
900°C air  $\parallel(010)$  0.305 mm

**3 mm**



1000°C air  $\perp(010)$  1.083 mm

**3 mm**



1000°C air ||(010) 0.725 mm

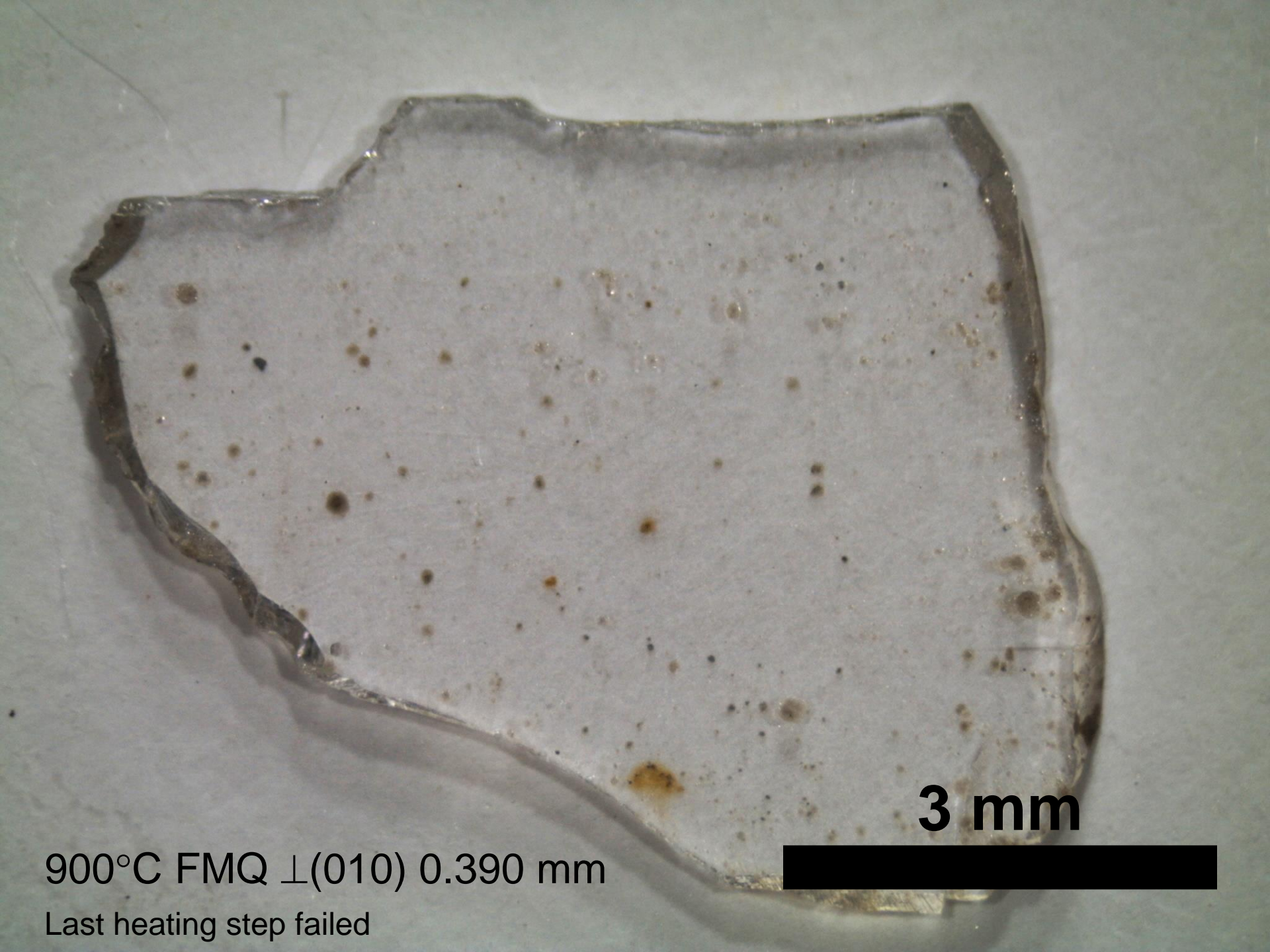
**3 mm**





**3 mm**

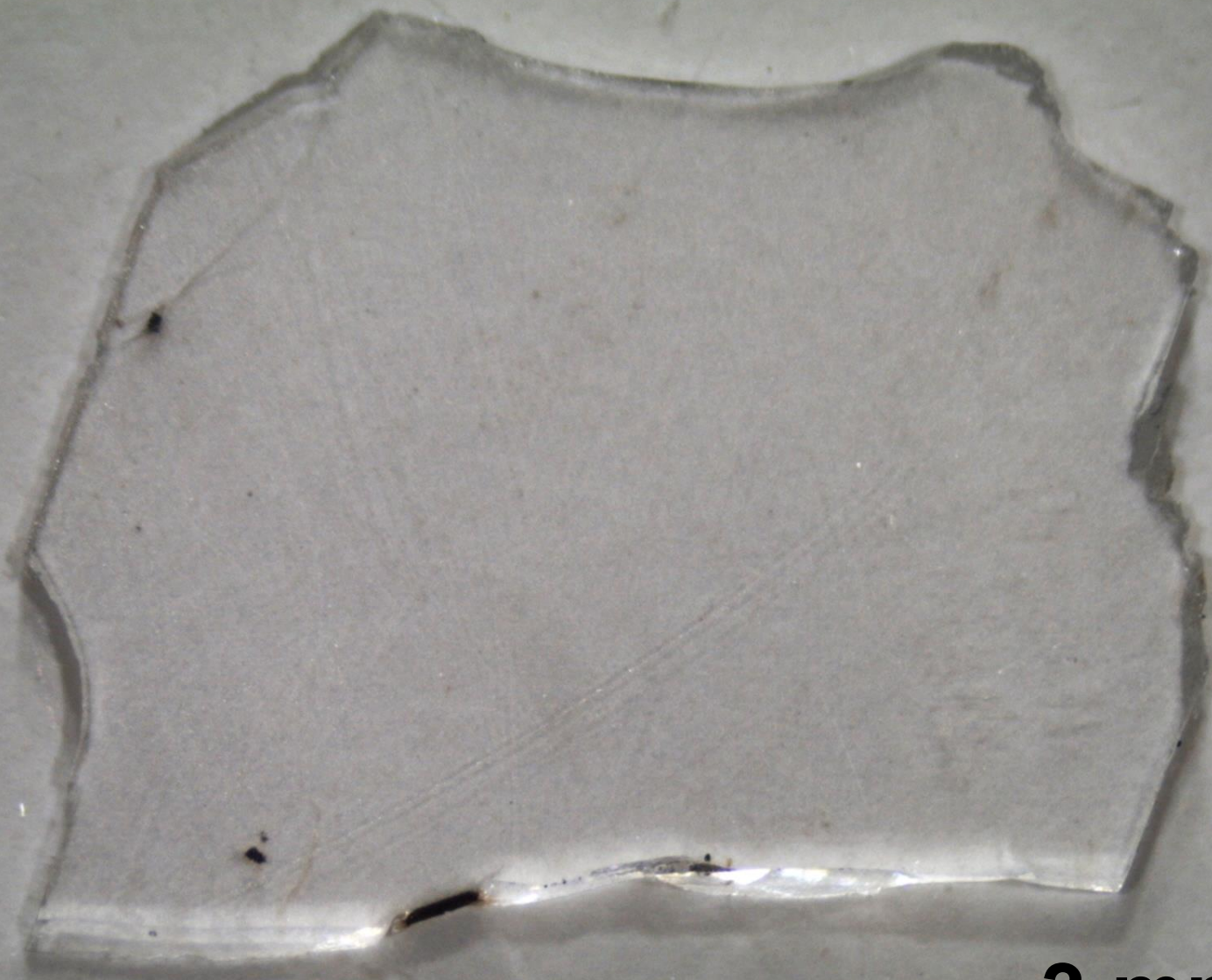
900°C FMQ ||(010) 0.532 mm



**3 mm**

900°C FMQ  $\perp$ (010) 0.390 mm

Last heating step failed



**3 mm**

900°C FMQ ||(010) 0.292 mm

Last heating step failed