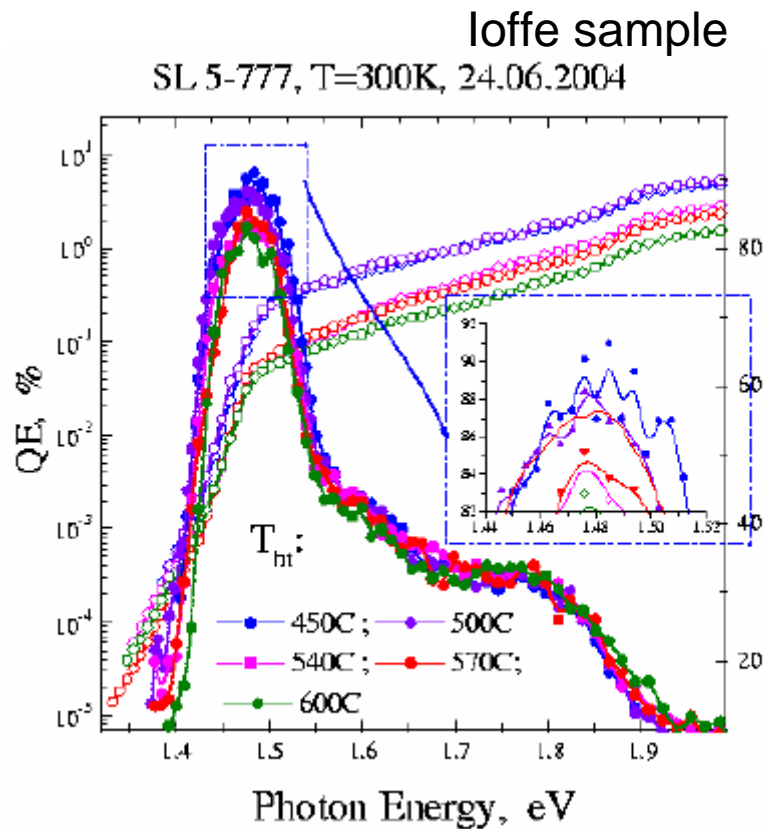


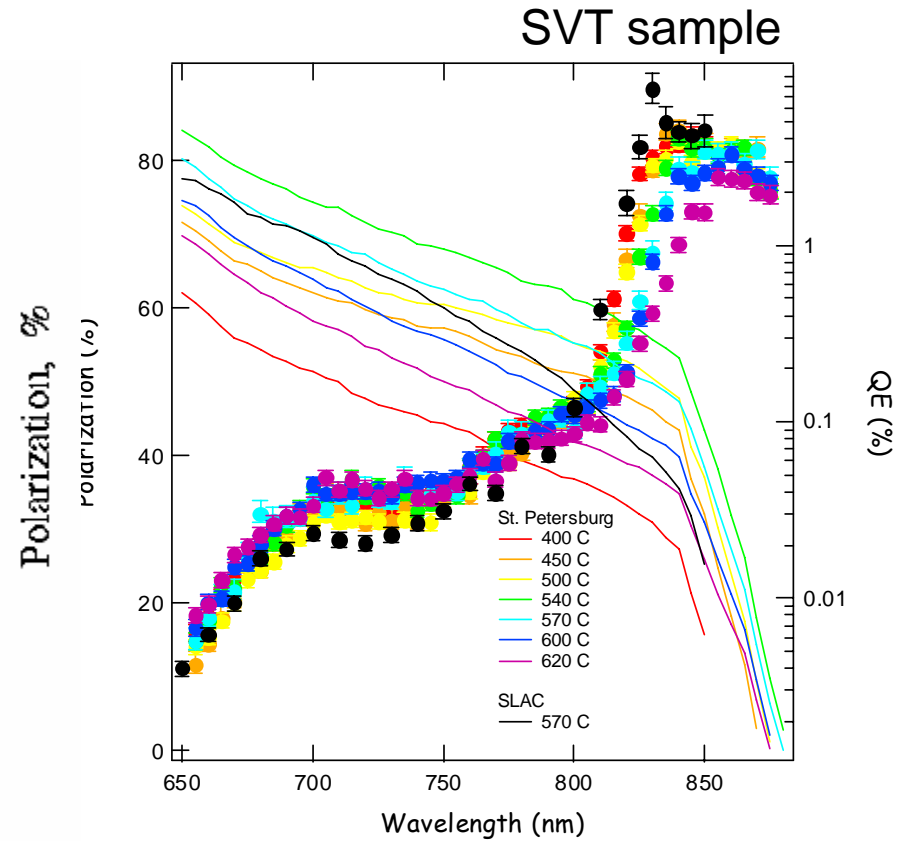
## Atomic hydrogen cleaning system on CTS

- AHC can lower the heat-cleaning temperature from  $\sim 600^{\circ}\text{C}$  to  $450^{\circ}\text{C}$ .
- AHC was originally built in order to reduce the dopant diffusion which causes the charge limit.
- Peak polarization seems to be dependent on the heat-cleaning temperature.
  - Seen only in Russian photocathodes.
- All our SVT GaAsP/GaAs superlattice cathodes were heat-cleaned at  $570 - 600^{\circ}\text{C}$ .
- Peak polarization may increase by  $\sim 5\%$  if the heat-cleaning temperature is lowered to  $450^{\circ}\text{C}$ .
- Could be structure dependent.

# Polarization depends on heat-cleaning temperature - InAlGaAs/GaAs



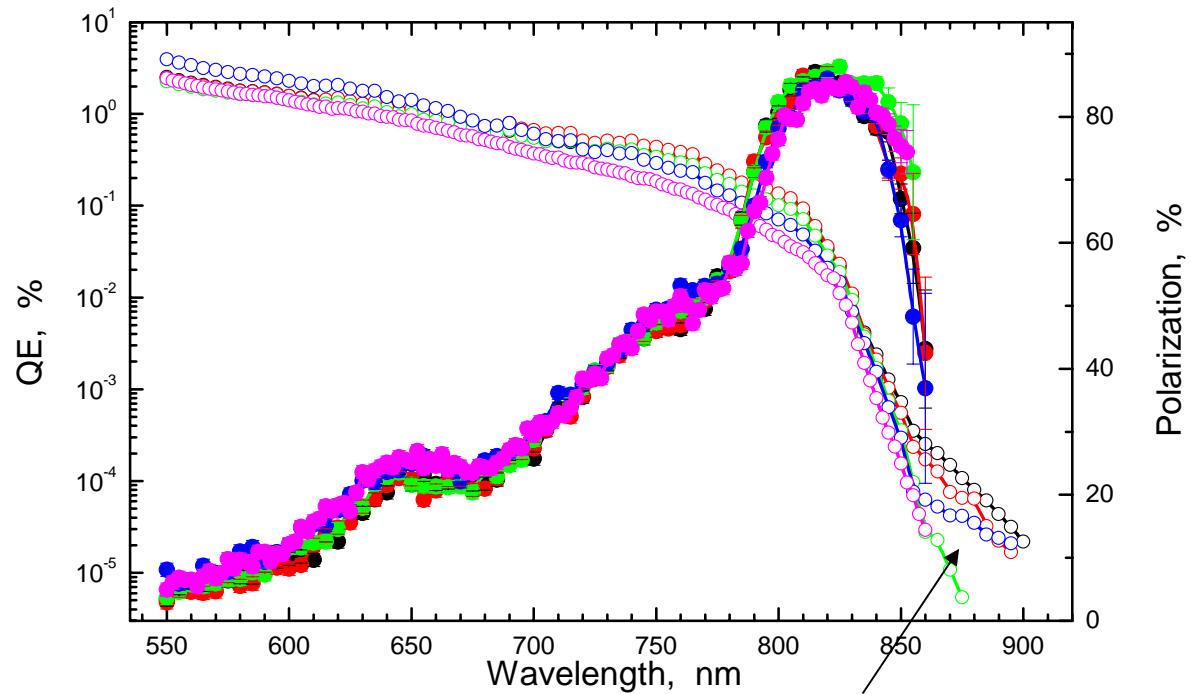
Polarization decreases from 91% to 85%.



Polarization decreases from 85% to 80%, and shifts to longer wavelength.

# 6-042 - InAlGaAs/AlGaAs

—○— QE-1, SL 6-042, Tht=450C, T=300K, 01.11.2004 —●— P-1, SL 6-042, Tht=450C, T=300K, 01.11.2004  
—○— QE-2, SL 6-042, Tht=500C, T=300K, 02.11.2004 —●— P-2, SL 6-042, Tht=500C, T=300K, 02.11.2004  
—○— QE-3, SL 6-042, Tht=540C, T=300K, 03.11.2004 —●— P-3, SL 6-042, Tht=540C, T=300K, 03.11.2004  
—○— QE-4, SL 6-042, Tht=570C, T=300K, 04.11.2004 —●— P-4, SL 6-042, Tht=570C, T=300K, 04.11.2004  
—○— QE-5, SL 6-042, Tht=600C, T=300K, 05.11.2004 —●— P-5, SL 6-042, Tht=600C, T=300K, 05.11.2004



Indium diffusion???

Will look like this in a week or so.

