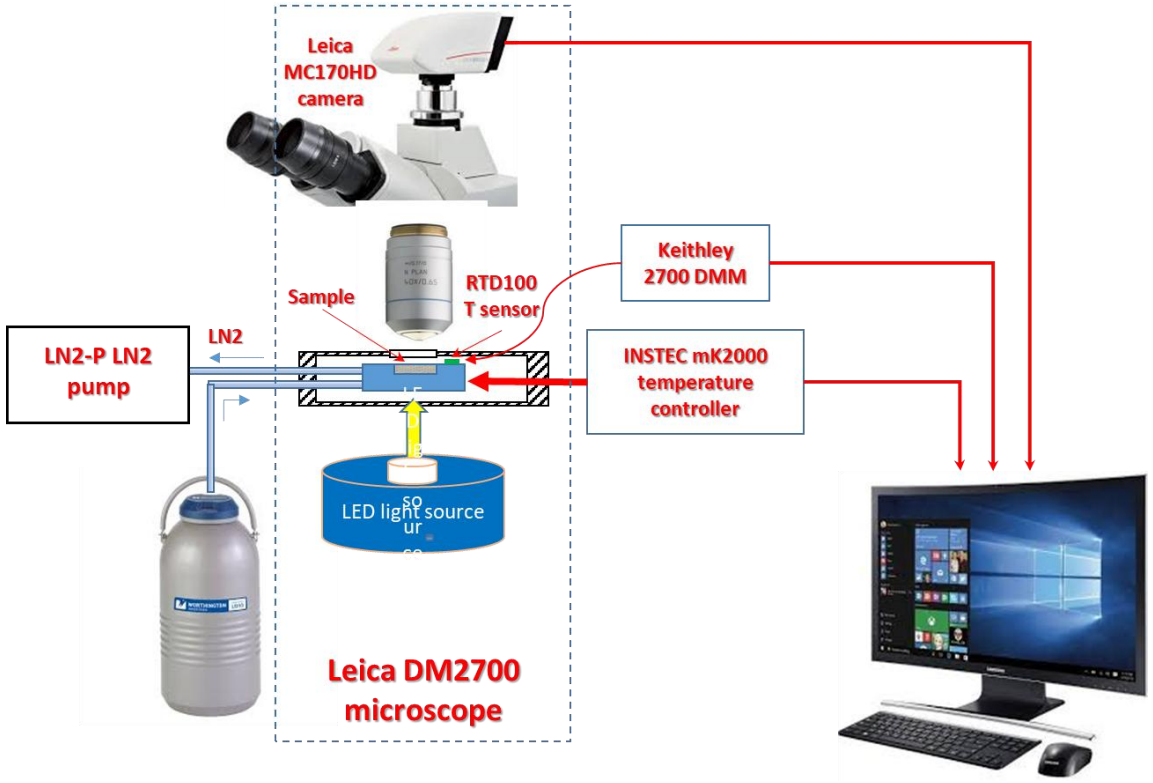
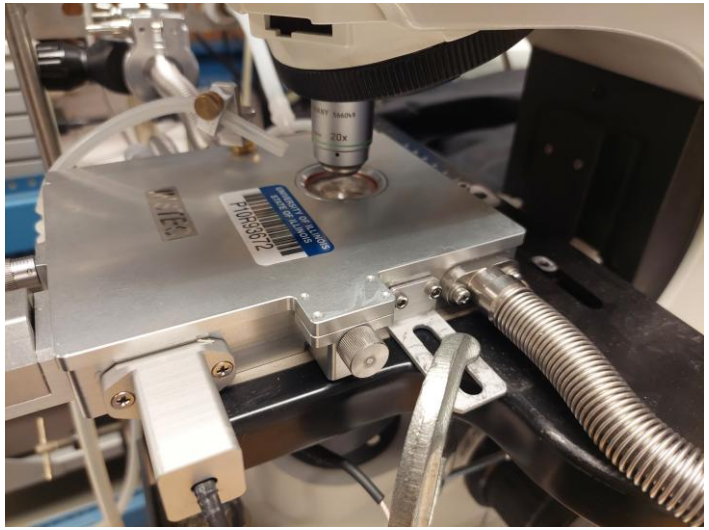
Condensed Matter	Ferroelectrics	Lab logo: *Ferro2*

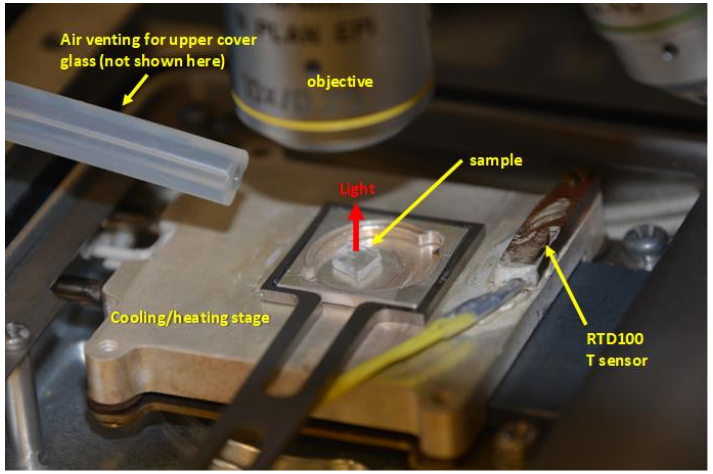
Ferro2 experiment: visualization of the ferroelectric domain by using polarizing microscopy. The main unit the setup is ***Leica DM2700*** polarizing microscope equipped by Instec ***HCS421VXY-F4*** heating-cooling stage covering the temperature range 83 ÷ 670 K'



Block diagram of Ferro2 setup

Condensed Matter	Ferroelectrics	Lab logo: *Ferro2*



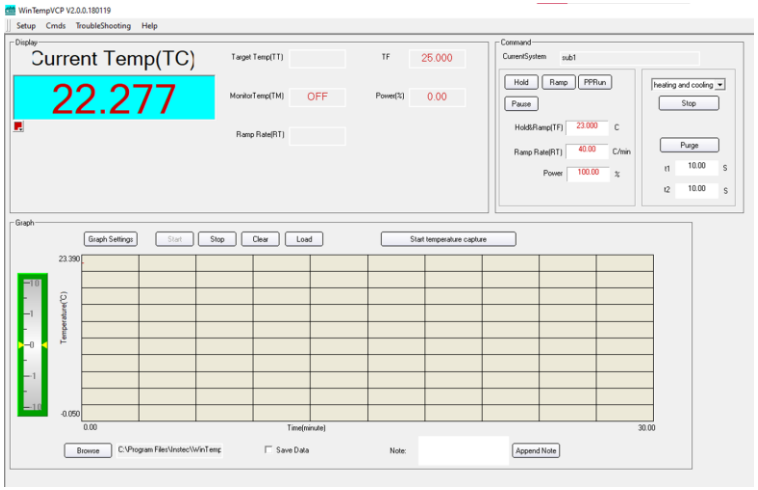


"Ferro2" setup

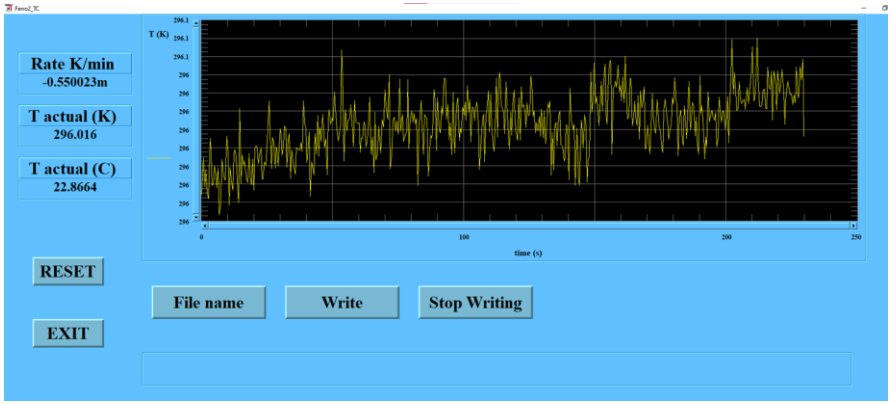
Condensed Matter	Ferroelectrics	Lab logo: *Ferro2*

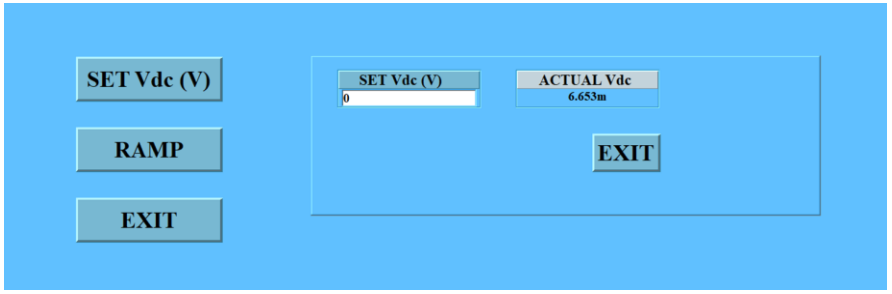
Software: ***Leica Application Suite*** - program controlling the microscope, **WintempVCP180119** – temperature controlling program provided by INSTEC ; ***Ferro2.vee*** program written on Keysight VEE language and providing the sample temperature monitoring and controlling the DC voltage applied to the sample (-60 V ÷ 60 V).

Leica Application Suite program



WintempVCP180119

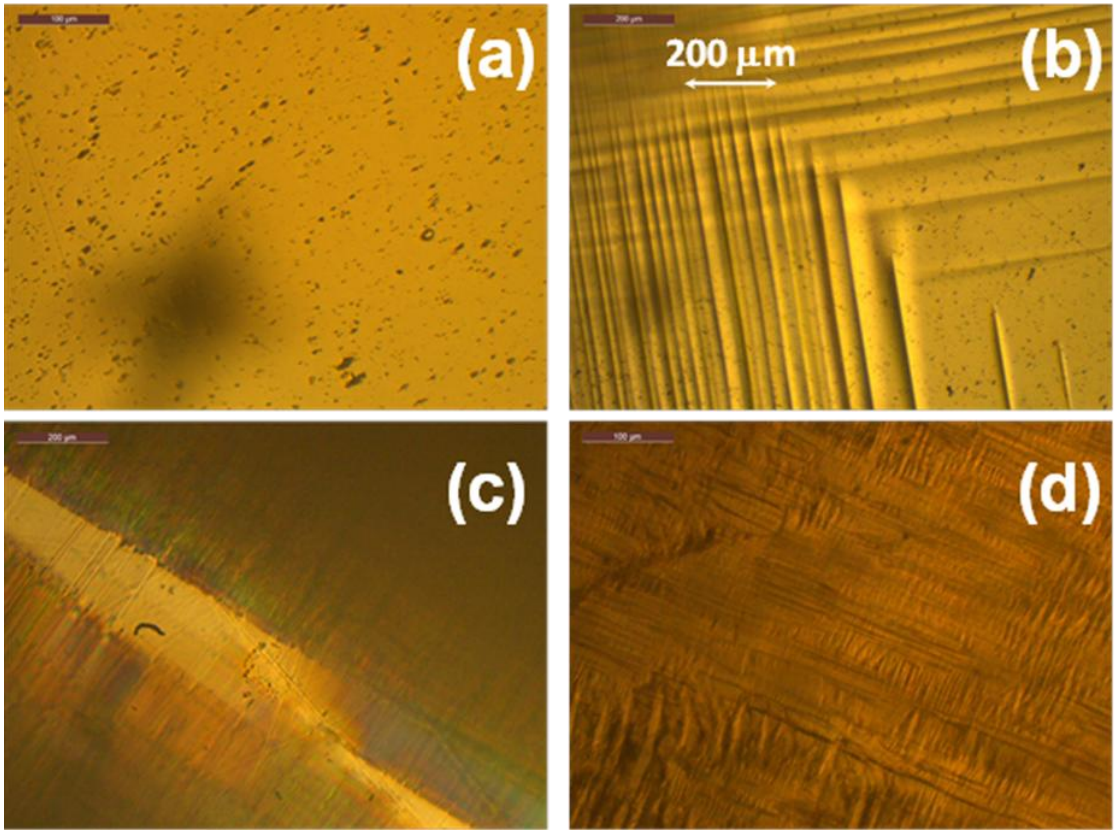




Ferro2.vee

Condensed Matter	Ferroelectrics	Lab logo: *Ferro2*

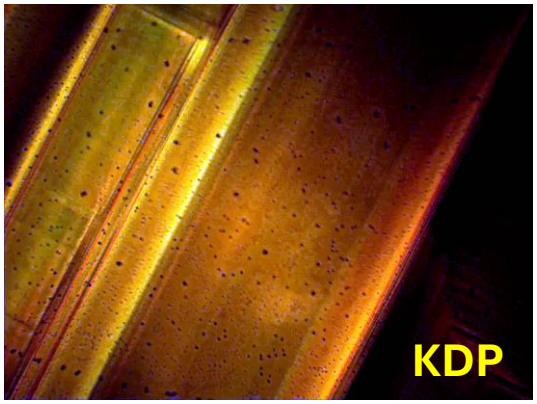
Some experimental results:

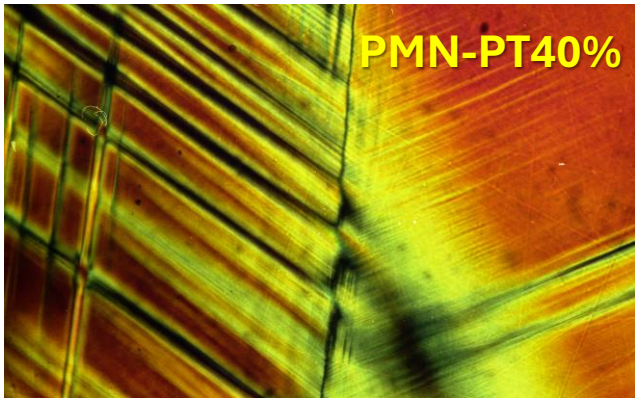


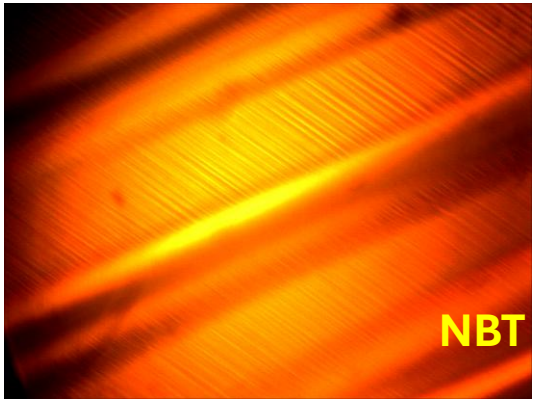
Domain structure of BTO at different temperatures corresponding different ferroelectric/crystallographic phases: a – cubic T~420 K, b – tetragonal T~350 K, c – orthorhombic T~270 K, d – rhombohedral T~ 150K.
(Courtesy of James Graessle and Haoran Lin, Physics 403 Lab Spring 2020)

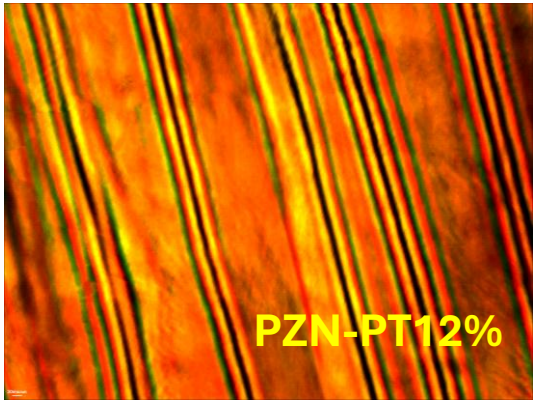
Condensed Matter	Ferroelectrics	Lab logo: *Ferro2*

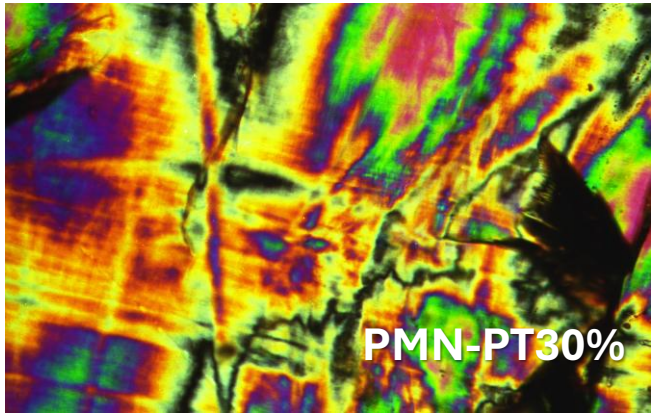
Some experimental results:











Domains in different ferroelectric materials