# Control of periodic ferroelastic domains in ferroelectric Pb1-xSrxTiO3 thin films for nano-scaled memory devices

Nesterov, Oleksiy

1. Some scientists prefer to think and plan in the morning and then act; others feel like doing in reverse order, thus they need to plan for the next morning. Both types are usually present in a scientific group. The most efficient collaboration and understanding between them occurs at lunch time.

2. It is possible to rotate a vector of spontaneous polarization in PbxSr1-xTiO3 thin films by the external electric field applied in a direction different to that of the polarization (Chapter 5). This implies that, at least under electric field, the 4-fold symmetry axis is absent and, therefore, the films cannot be tetragonal.

3. It is known that scientists must objectively evaluate experimental data in order to interpret natural effects correctly. Thus thinking like "I want to see some expected results" is your worst enemy. That is why extra care should be taken when analyzing data of an experiment that is performed to test a theoretical prediction.

4. One of the best crystalline quality substrates available in the market for PbTiO3 thin film growth is DyScO3, which happens to be also the most difficult substrate to work with (this thesis).

5. The large kinetic energy intrinsic to thin film growth by Pulsed Laser Deposition is known to provide access to novel materials often in metastable states. Thus, it is possible that at the end of the PhD the samples also get tired and do not keep their properties and structure anymore – that is why you have to be gentle and fast with your measurements.

6. Strain relaxation in PbTiO3 thin films grown on SrRuO3-buffered (110)-DyScO3 substrate, has a preferable axis (Chapter 3).