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## Piezoresponse Force Microscopy (PFM)

Scanning probe microscopy (SPM) emerged as a powerful tool to image surfaces at the nanometer scale. The common feature for SPM techniques is a sharp tip which scans the sample surface. Depending on the sample and the probe, various interactions can be measured, for instance electrical, magnetic or mechanical. Piezoresponse Force Microscopy (PFM) is based on the detection of electromechanical deformation. A conductive tip is brought into contact with the surface and a voltage is applied between the sample and the tip, resulting in an external electric field. A piezoelectric sample will locally expand or contract, due to the converse piezoelectric effect. Therefore PFM is one of the most important tools to study piezoelectric materials on a nanometer length scale. Apart from the microscopy-aspect, PFM gives also the opportunity to locally write domains in ferroelectric materials.