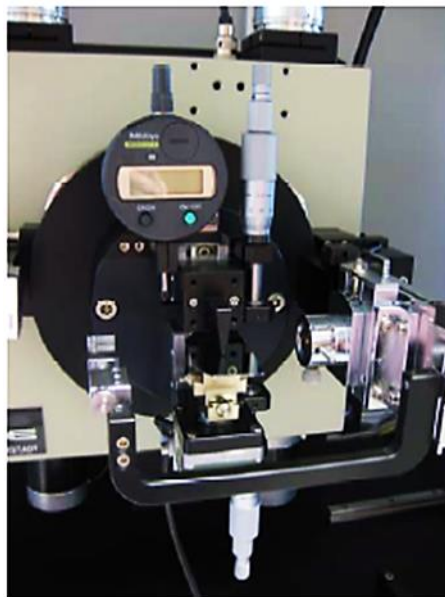


REFLECTOMETRY MEASUREMENTS WITH STOE STADI MP

The properties of thin films affect their reflection and interference characteristics. The two most common ways to measure these are reflectometry and ellipsometry. The STOE thin film attachment uses the total scattering method and detects the reflected amount of X-ray radiation from a thin film. It allows analyzing the thickness of layers in the nanometer scale. For example, single-layer or multilayer films of semiconductor process films can be analyzed.

With STOE's evaluation program Layer, up to six layers can be specified in a film stack on a buffer and a substrate. The various films and substrate materials can be metallic, dielectric, amorphous or crystalline semiconductors.

As misalignment of the sample strongly affects the quality of the results in reflectometry experiments, STOE's reflectometry sample holder has been specifically designed for accurate alignment.



The data have been collected on a STOE STADI MP diffractometer with a scintillation counter as point detector and Cu $K_{\alpha 1}$ radiation. The usage of the focusing position allows a quasi-parallel beam at the sample space. The adjustment blade also serves as a slit suppressing undesirable parts of the beam.

The sample has been a Silicon wafer coated with Tantalum and polycrystalline Silicon. The data have been analyzed with the program Layer, part of the STOE WinXPOW software suite.

