RES-TEC

Explore the Power of Evanescent Fields

RES-TEC 1Pager – The RT2005

Alignment

- ✔ Check beam path using apertures 1 and 2 and re-align if needed: Use mirror 1 to focus on aperture 1 and mirror 2 for aperture 2, respectively.
- ✔ Position sample in center of goniometer: Align sample such that laser spot does not move during angular scans. At a small angle, use x-stage to focus laser beam in the center of the sample (or measurement chamber). Repeat at high angle using the y-stage. Repeat alignment cycle until the spot rests in one place on the sample.
- ✔ Calibrate angle: Change sample's angular position until the back reflex of the laser beam from the prism aligns with aperture 2 (or even aperture 1). Use tilting table to align the beam height if needed. Set the reference angle using the WASPLAS software (e.g. 45° if 90° prisms are used).
- ✔ Set laser intensity: Use polarizer 1 and adjust intensity at the lock-in amplifier (or M2000 multimeter) to a value < 100 mV (~80 mV).
- ✔ Choose measurement type: Scan measurement, or time measurement (Fixed angle, t_{min} < 1s), or mode tracking (t_{min} > 4s)

Scan measurement

Suggested parameters:
Measurement sections: 3
Motor delay time: 150ms (3 x Tc)
Typical angular step width 0,2° or 0,1° to track TIR or SPR minimum

Time measurement (kinetic mode)

Move both motors simultaneously to an angle to the left side of the plasmon resonance and start measurement at app. 30% initial reflectivity.

Mode tracking

Set both motors to angular values that correspond to the plasmon resonance
Suggested parameters:
Time interval: > 5s
Step size: 0,3°
Delay time: 150ms (3 x Tc)

Hint: Start ***and*** end all measurements at 45° and confirm position of back reflex!