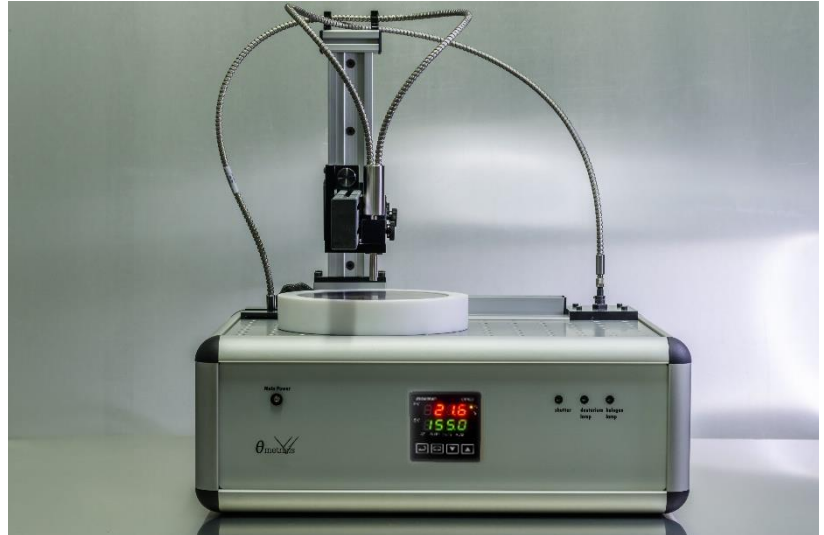


FR-Thermal: Real-time Film Characterization during thermal treatment

FR-Thermal kit is an accessory for FR-pRo tools. It consists of a 5inch wide hot-plate fully controlled through FR-Monitor software. The user can set the temperature, the heating rate, design thermal cycles etc. and monitor in real-time the thickness & optical properties (e.g. refractive index) evolution vs. time and temperature of thin/thick films (e.g. polymers, photoresists).



By using FR-Thermal and the especially developed algorithms included in FR-Monitor, **physicochemical properties of the films**, such as:

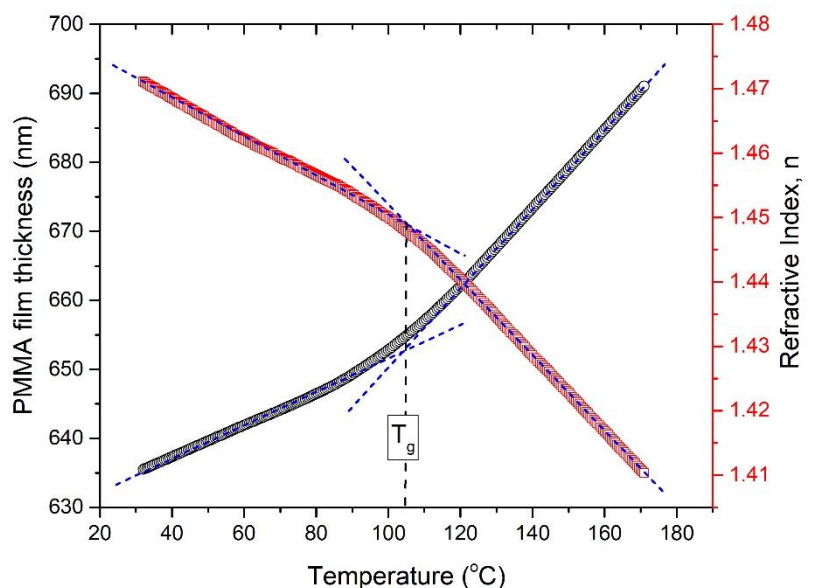
- **glass transition temperature** (T_g^{film}), and
 - **thermal degradation temperature of polymer films** (T_d^{film})
- are measured for a **wide film thickness range (>20nm)**.

Applications

- Characterization of polymers/photoresists
- Physicochemical properties
- Dynamic film thickness measurements
- Dynamic Reflectance measurements

Features

- Temp Range: up to 200°C*
- Manual/Auto control
- 5inch heating area



Simultaneous monitoring of film thickness and optical properties changes of a PMMA film during heating. The Glass Transition temperature (T_g^{film}) is 105°C.