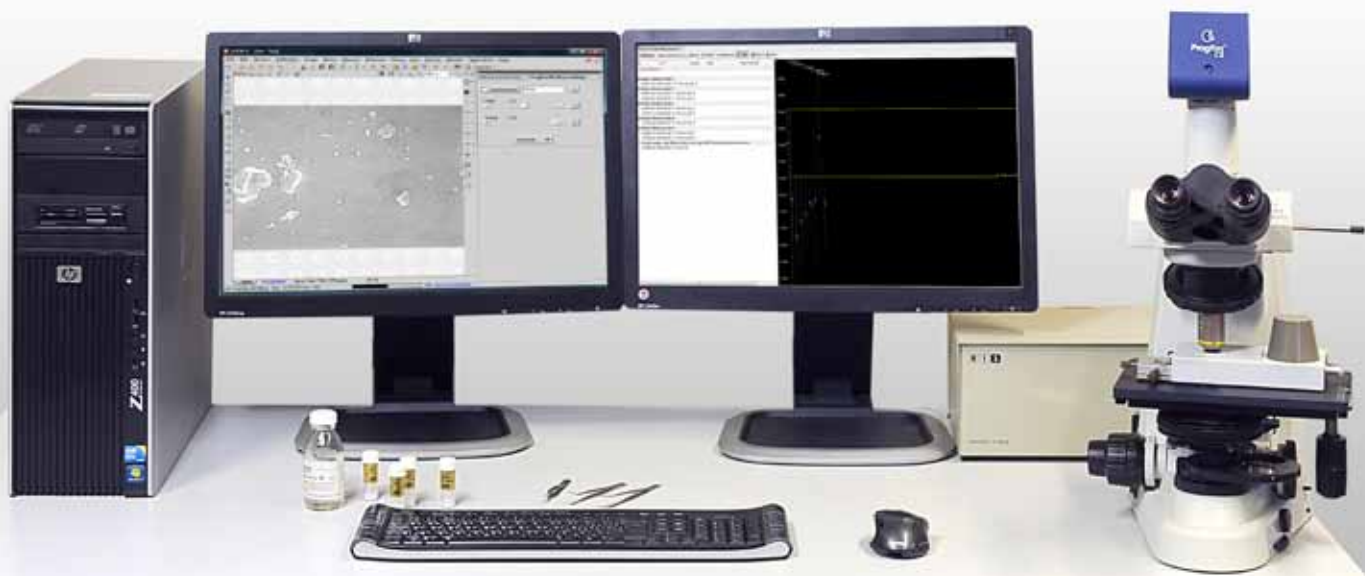




Lucia RI™

Refractive Index Measurement System for Forensic Utilisation



Features

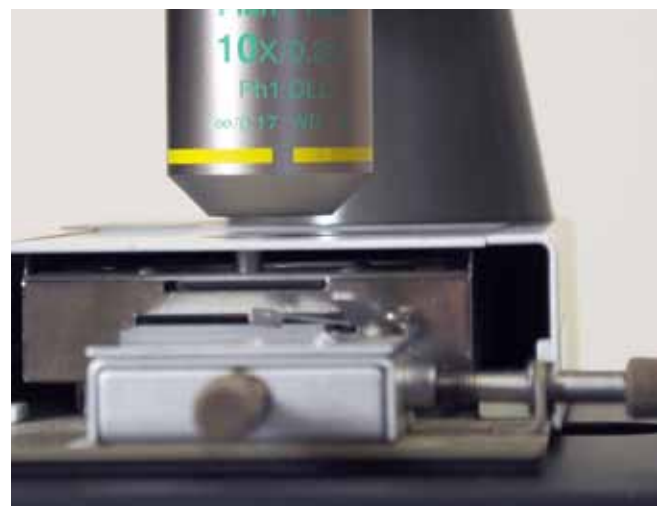
- Refractive index measurement solution for forensic analysis of glass splinters
- Full heating stage and camera control
- Sufficient objective working distance for easy replacement of slides
- Software tools for reproducible RI measurement
- Reliable measurement evaluation
- User-friendly reporting
- Environmental conditions monitoring
- Long term system stability measurement
- Up to 20 measurement probes
- Video recording of the measurement progress
- Network mode for multiple systems
- The software includes image analysis tools

Optional equipment

- Miniature fibre optics spectrometer working in visible light range
- EPI illumination working in dark field and bright field
- Carrousel holder of interference filters
- Two-monitor system, printer and other computer customization
- The spectroscopy software module can be used for spectral and colorimetric analysis of glass in visible light

Parts

- Nikon microscope with DIA illumination and phase contrast
- High-quality ProgRes MS monochrome digital CCD camera
- Mettler Toledo hot stage with RI1™ controller
- Environment monitoring unit
- High performance PC workstation 64bit
- Lucia RI™ software
- A set of silicone oils, calibration glass standards and set of interference filters



Measurement method

- Small glass splinters are immersed in the silicone oil in the hot stage and put under the microscope
- Phase contrast optics guarantees high image contrast, live camera image enables fast image focusing
- The Becke line disappearance temperature is detected automatically
- A video file of the heating and cooling phase of the measurement in the temperature interval is recorded
- Up to 20 probes with changeable size and rotations can be placed to specify measurement positions
- Refractive index can be re-measured using recorded data even with new probes, without the necessity of repeating the heating-cooling process

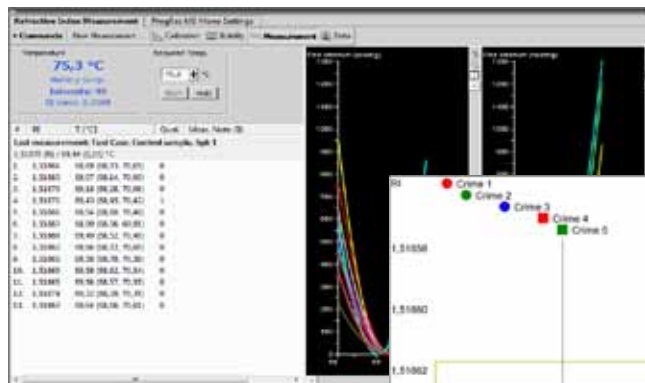
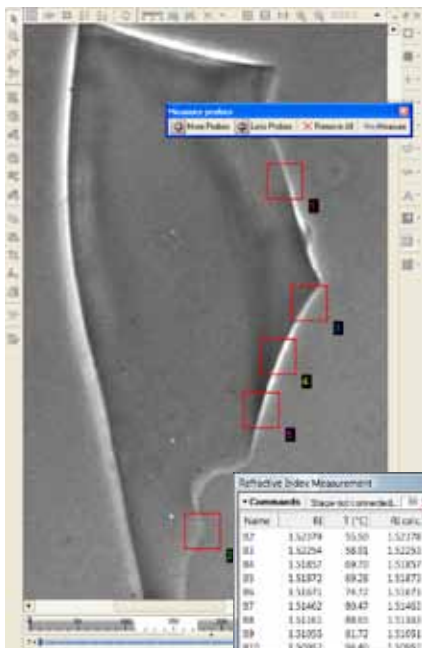
Measurement evaluation

- Illustrative interactive graphs of heating and cooling phase for each probe with zoom possibility enable fast visual measurement check

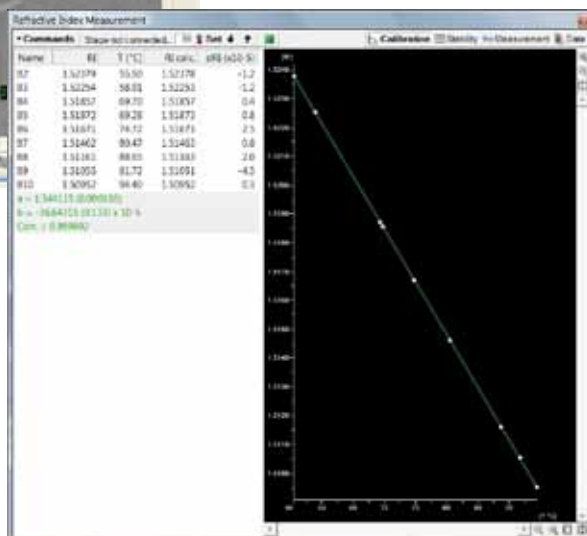
- Automatically generated statistics of refractive index measurement
- Several splinters (multiple control and crime) can be compared in the comparison graphs
- Results can be saved into the database including information about the environmental conditions, case, evidence, splinter number, splinter size, glass color, date, operator's comments, etc.
- Report templates can be created and reports in pdf can be quickly generated or exported into Microsoft Excel

Reproducibility and reliability

- Calibration via the glass standards
- System stability graph is generated using everyday stability measurement of refractive index of high precision glass standards to monitor long term stability
- Environmental conditions (air temperature and humidity) are measured and saved together with every refractive index measurement to exclude influence of possible environmental changes



Measurement results window
Comparison of several measurements



Screenshot of the measurement (glass splinter, measurement probes)

Locke Scientific Oil B calibration curve

