

MicroLap Technology

Depth Profiling of Composition

Some samples are too opaque to allow the IR beam to penetrate to the depth of interest. Spectral overlaps may also interfere with depth profiling.

In these cases a micro-lapping approach allows spectra to be measured layer-by-layer.

In other cases micro-lapping can be used to calibrate PAS non destructive depth profiling during methods development.

Depth Profiling Using the MicroLap Process

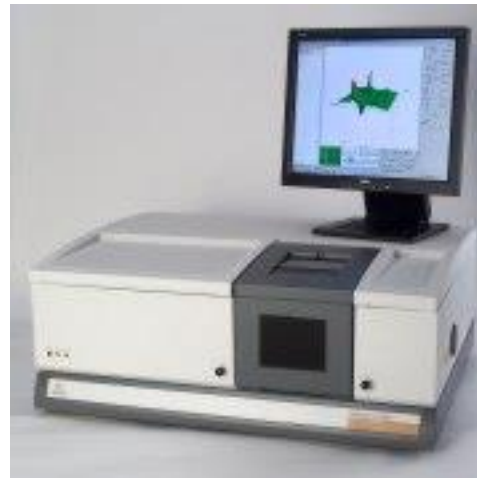


1. Measure Thickness

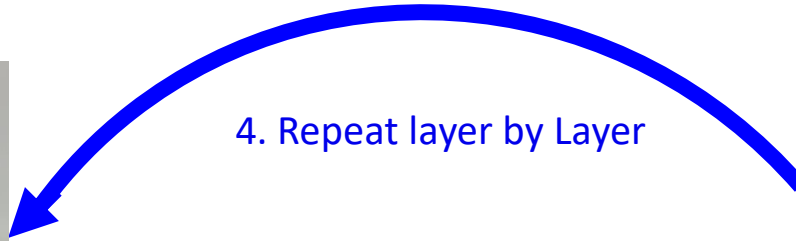
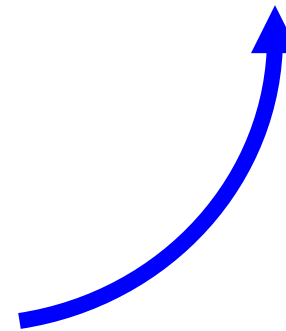
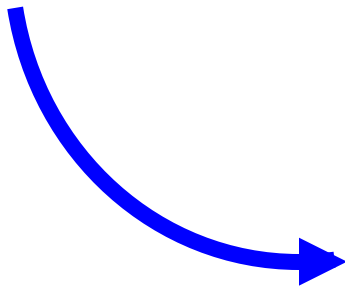
4. Repeat layer by Layer



3. Lap off a Layer



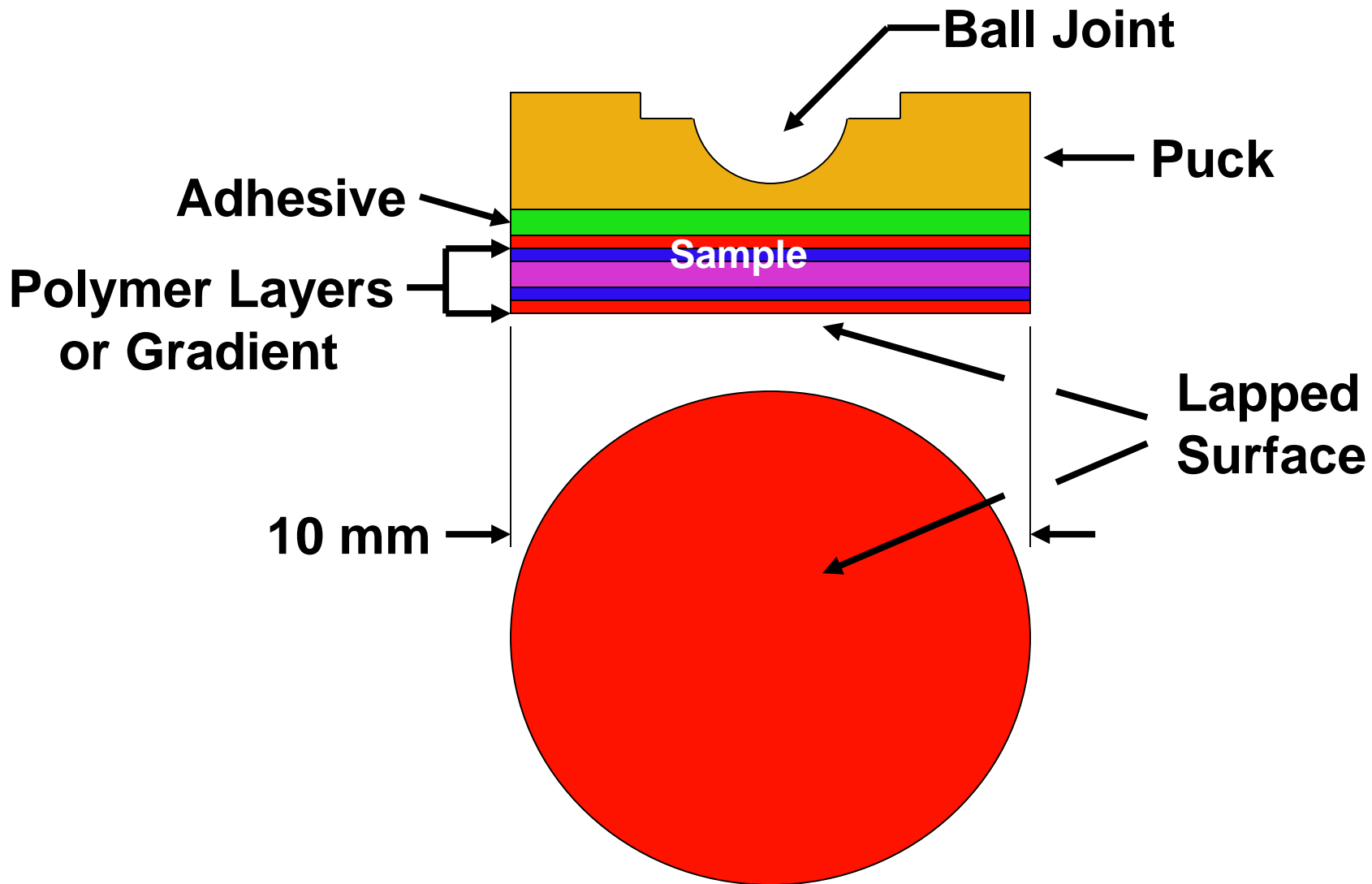
2. Measure Spectrum



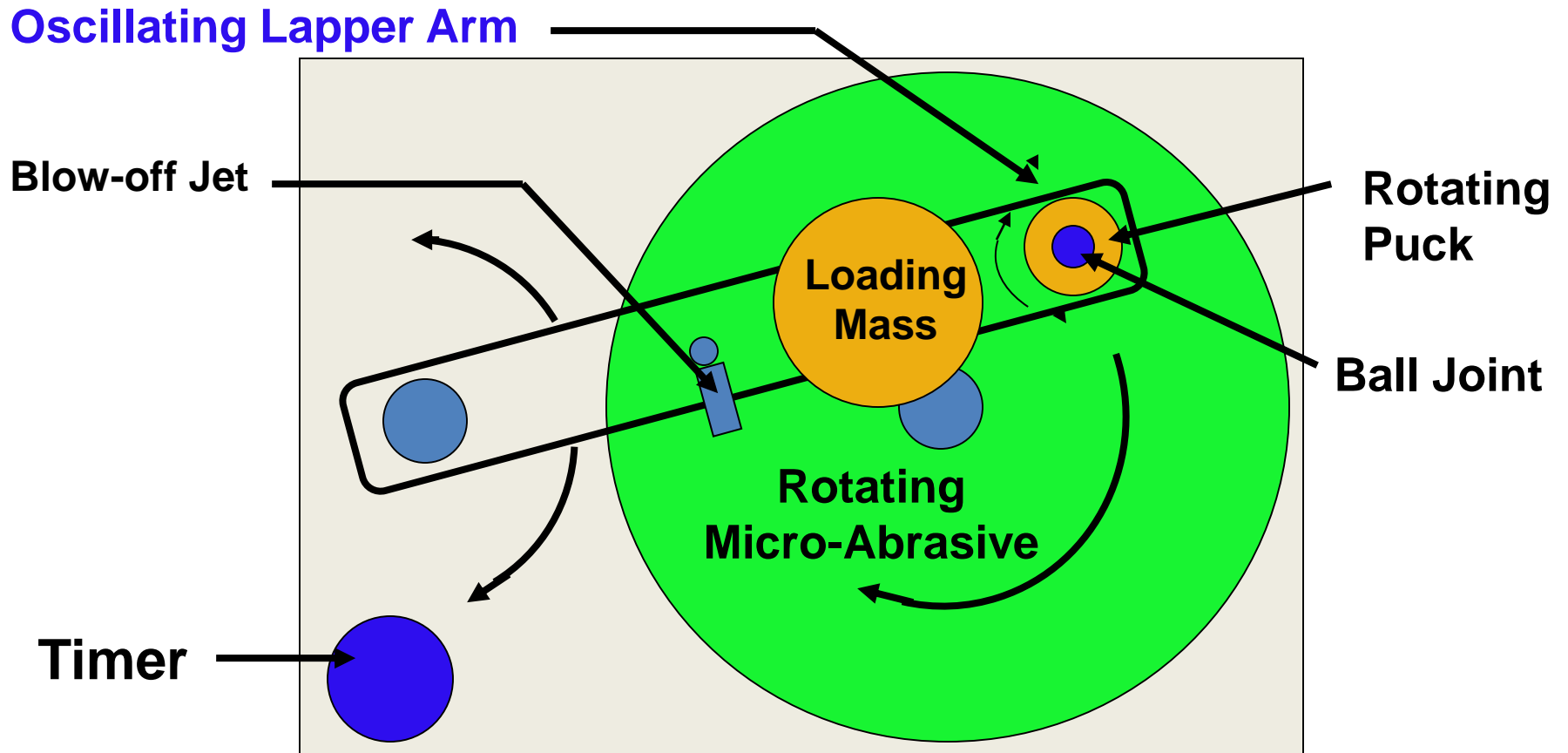
MTEC MicroLapper and Thickness Gage



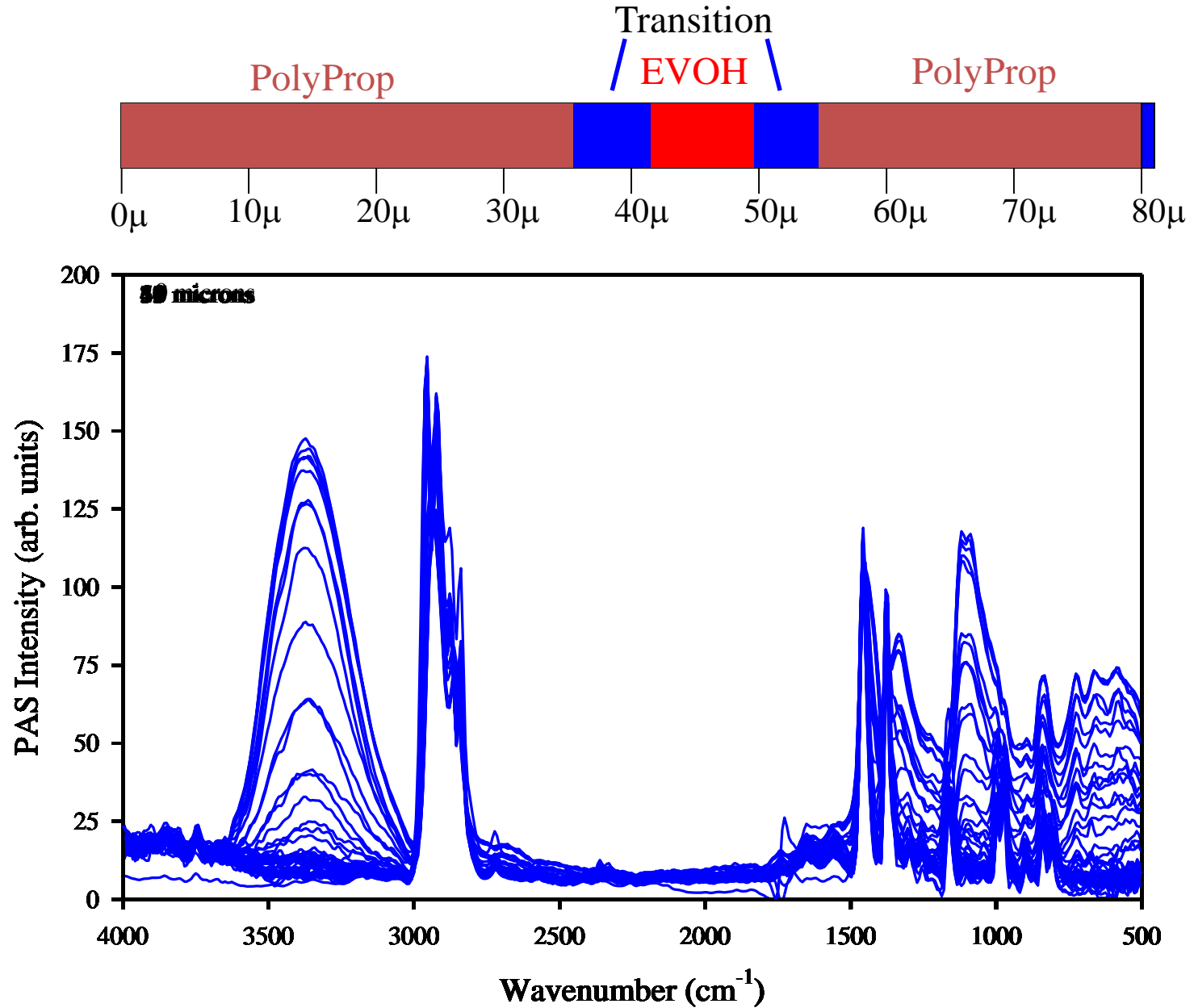
Lapping Puck



Lapper Motion



Successive Spectra Measured as a Function of Depth



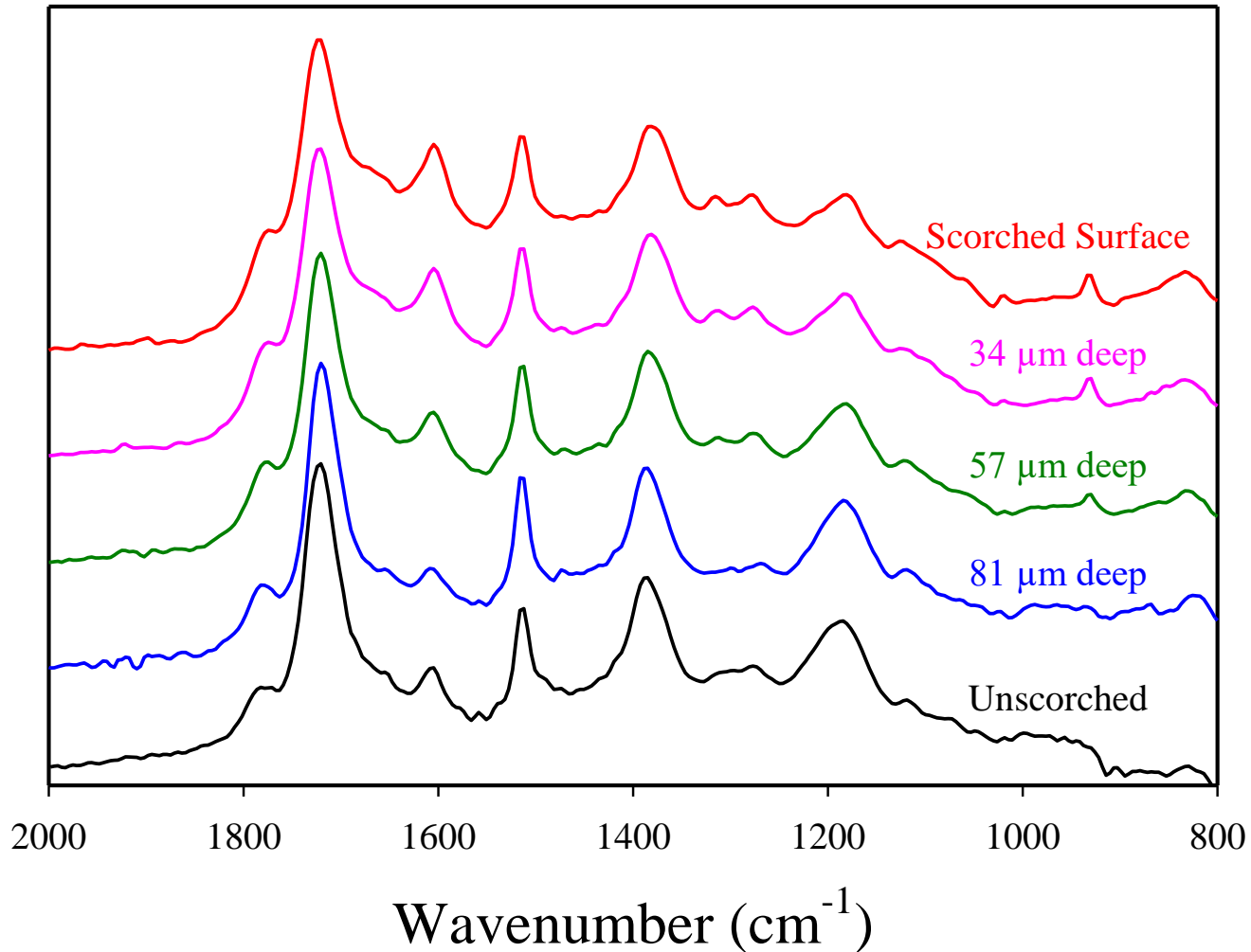
PAS Analysis of Composite Scorching

Scorching occurs when jet exhaust strikes nearby aircraft (navy carrier decks).

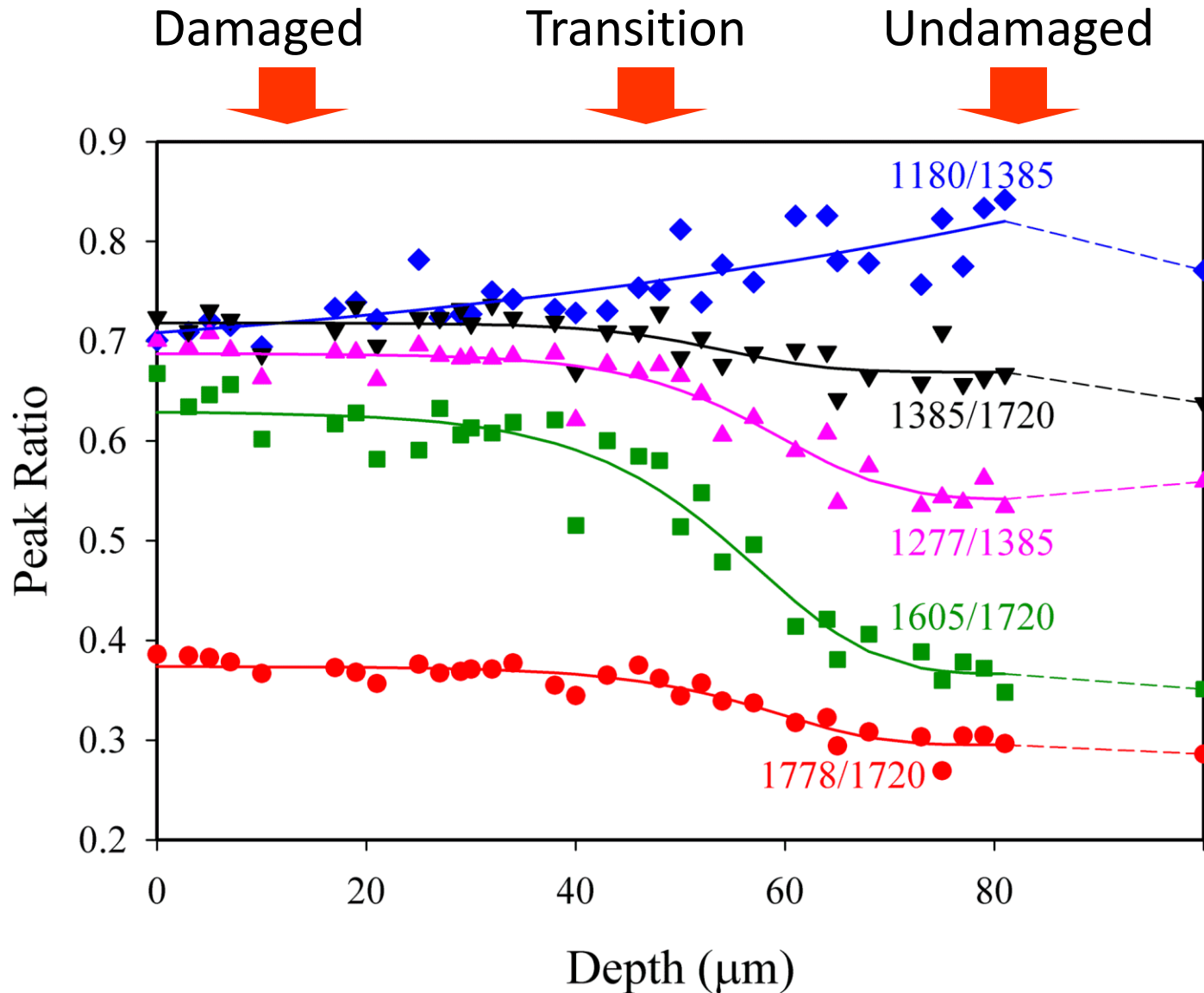
Carbon fiber/BMI panel scorched with air stream at 617 °C for 15 seconds. No visible change.

PA spectra taken as material removed by microlapping.

PA Spectra Taken During Microlapping of Scorched Area



Peak Height Ratios versus Depth into Scorch



Additional Information Can Be Found in the MTEC Applications Library:

Microlap Depth Profiling of a Paper Coating

MicroLap Depth Profiling of Automobile Paint
Weathering

Quantitative Depth Profiling Saturation-Equalized
Photoacoustic Spectra