

## Radii Measurements

### Executive Summary

Optimet's ConoProbe MK10 with a 25 mm focal lens was used in the application of radii measurement. The tests were performed to demonstrate measurement capability. During the test the whole sample was measured and radii in both directions were calculated. The sample's shape is the main factor that influences the results of the measurement.

### 1. Optimet's Advantages over Other Technologies:

1. Unique collinear technology
2. Capability to measure sharp angles in minimum clearance
3. High lateral resolution
4. High sampling rate with no need for averaging

### 2. Application Description

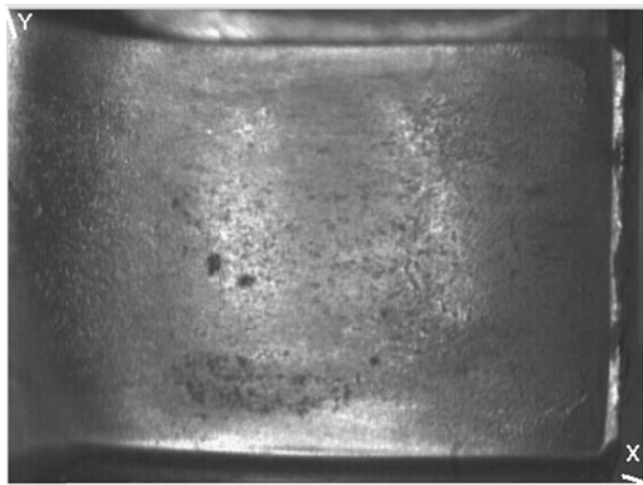
Sample radii measurements using Optimet's ConoProbe MK10 with a 25 mm focal lens.

#### Test settings:

- Measurement rate: 9 kHz
- X-step: 20  $\mu\text{m}$
- Y-step: 20  $\mu\text{m}$
- Laser power: 20

### 3. Results and Observations

#### Sample



Observations (fig.1) – As can be seen, the sample's surface is uneven and includes holes.

**Figure 1** – Sample photo under microscope

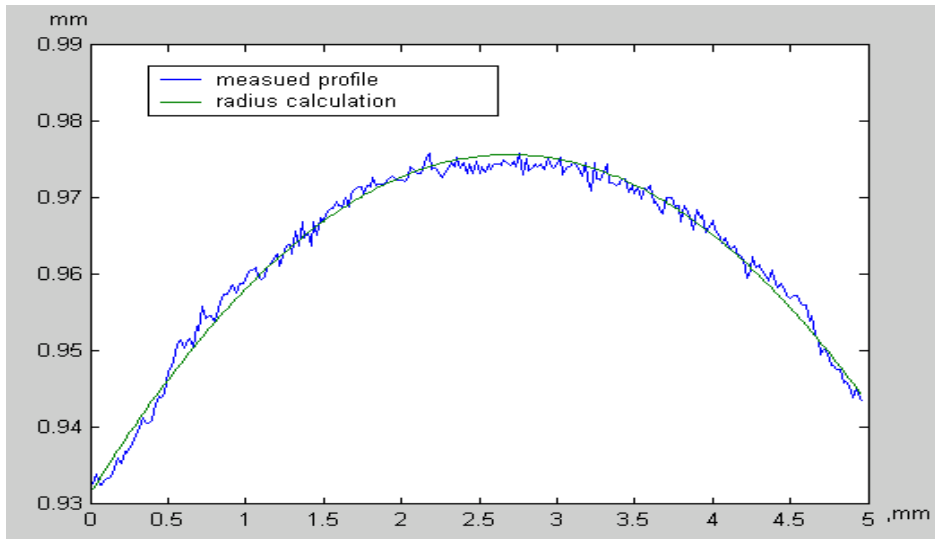


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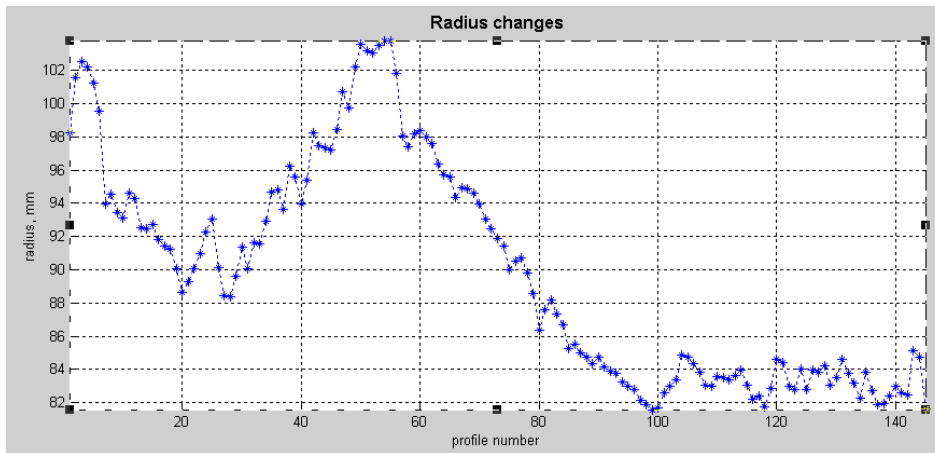
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### Radius Measurements in X Direction

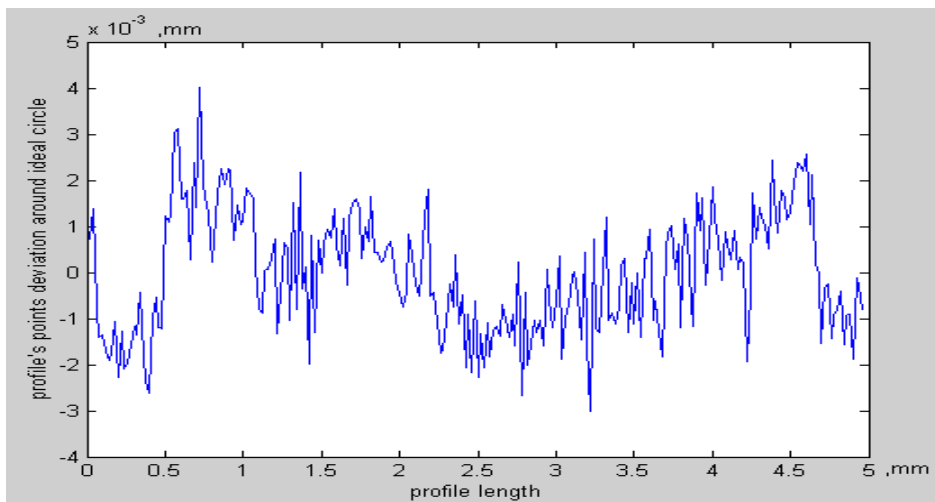


Note (fig. 2) –  
Measured profile and  
radius approximation  
are shown in the graph.

**Figure 2** – Radius calculation in selected profile



**Figure 3** – Radius variations



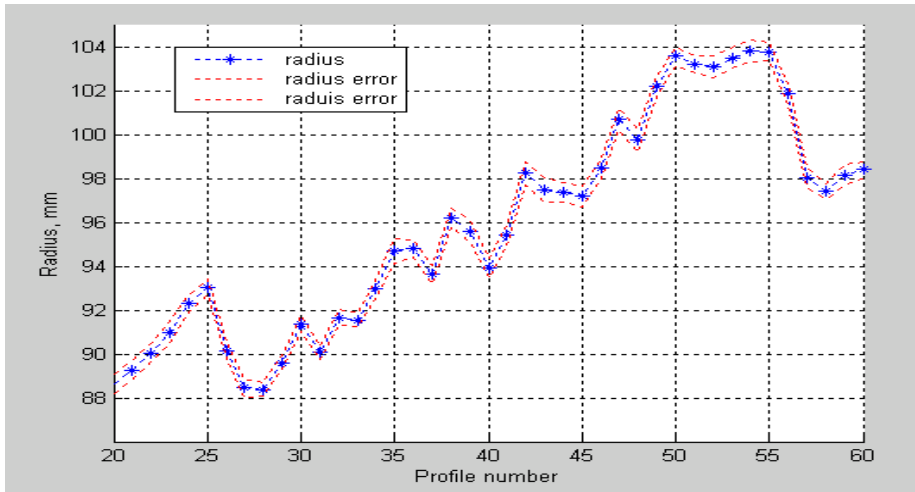
**Figure 4** – radius error



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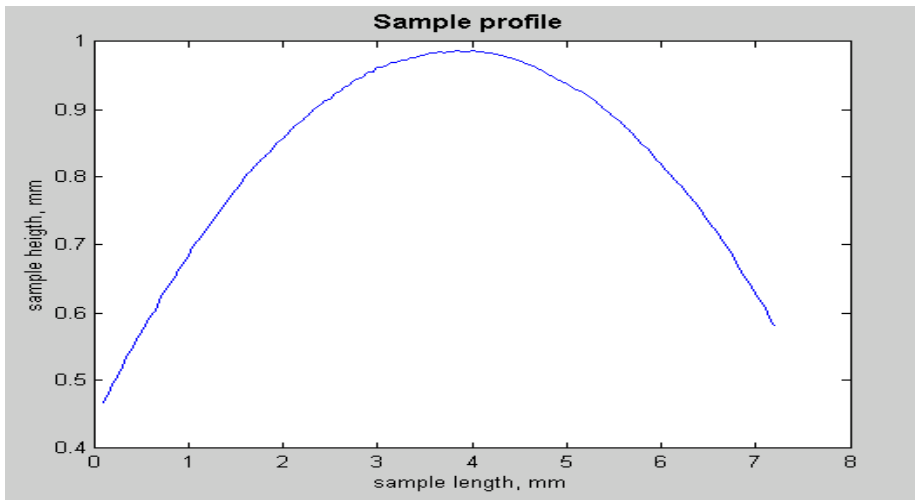
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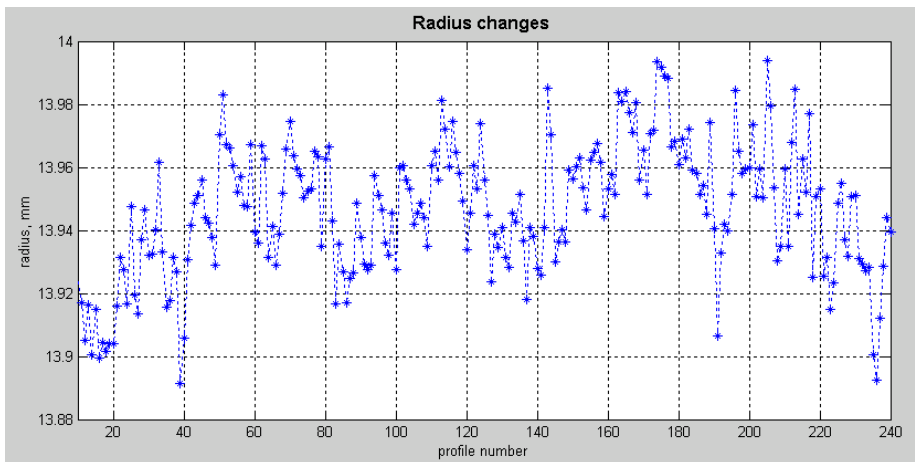


**Figure 5 – Fragments of radii with error calculation**

**Radius Measurements in Y Direction**



**Figure 6 – Selected profile**



**Figure 8 – Radius calculations along the whole sample**

## Conclusions

During the test we found that the radii are not constant on the sample, especially along X- axis (fig. 5).

To verify the measurement's results, the data was analyzed in Matlab. For each profile, the radius and radius deviation were calculated (a total of 145 profiles in the X direction and 250 in the Y direction).

## 4. Data

For 25 mm and 50 mm focal lenses:

<b>Parameter</b>	<b>Value</b>
Reflective/Diffusive/Transparent/Translucent	Diffusive
Working Range (mm)	1.8
Precision ( $\mu\text{m}$ )	3
Stand Off (mm)	15
Max. Data Rate (Hz)	9K
Lateral Resolution	-
Z Resolution	-
Application Category	-