# REPLICA ANALYSIS

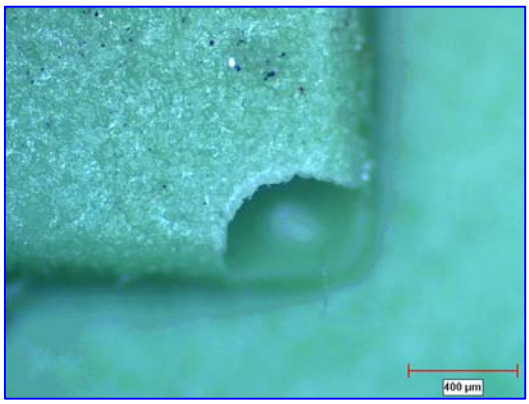


***Figure 1:*** *Top view of the flaw replica at 50x. Calibration factor = 2.55 ㎜/pixel.*

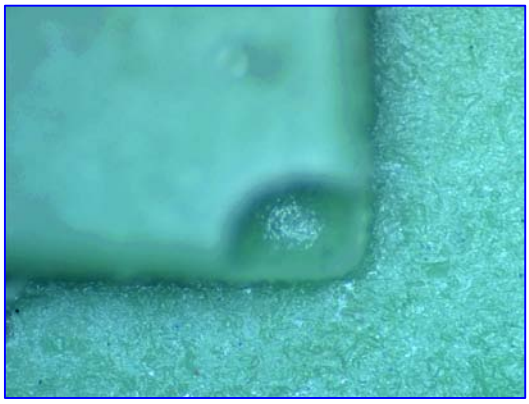

***Figure 2***: *Bottom view of the flaw replica. The focus is on the tube replica.*

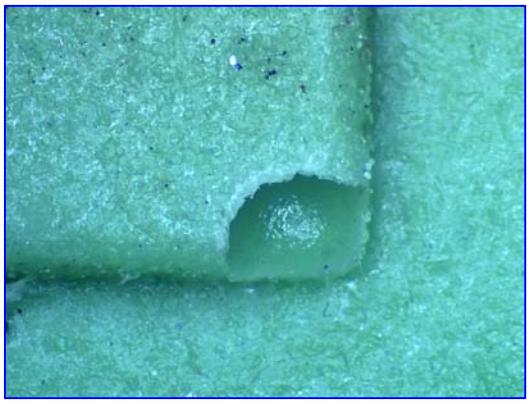

***Figure 3:*** *Multi-layer grabbed image using 30 layers at 50x.*

## Conclusion

The measurements and the multi-layer grabs can be performed as requested.

## Sample Description

Two samples of rubber replica material on aluminum backing plates are submitted for analysis. Replica is from inside tubing with defects.

## Purpose of Analysis

The purpose of this analysis is to demonstrate the ability of the Clemex Vision image analyzer to perform multi-layer grabs to see all features of the flaw in focus. It also has to demonstrate that Clemex Vision can measure the flaw depth (flaw replica height).

## Apparatus

| | |
|---|---|
| *Image Analysis System:* | Clemex ImPak V3.0 |
| *Microscope:* | Nikon Optiphot 150 dark field illumination |
| *Objective:* | Nikon 5x (50x Mag, for 2.55 ㎜/*pixel*) |
| *Motorized Stage:* | Marzhauser EK8B-S1, autofocus drive |
| *Stage Controller:* | Clemex ST 100 |
| *Z Calibration:* | 0.09058 µm / z motor step |
| *Camera:* | Sony DXC 950P (3CCD) |

## Procedures

The user focuses on top of the flaw replica and starts the routine. The system measures the current z position and asks the user to focus on the bottom part of the replica before measuring this new z position. Data are exported to an Excel sheet and Excel automatically calculates the difference between both positions. At the same time, it evaluates the ideal quantity of layers to use for a multi-layer grab on this specific feature. The multi-layer grab instruction is then used to capture an image of the flaw replica with all features in focus.

## Results

| Sample | Height |
|---|---|
| 1 | 486 microns |

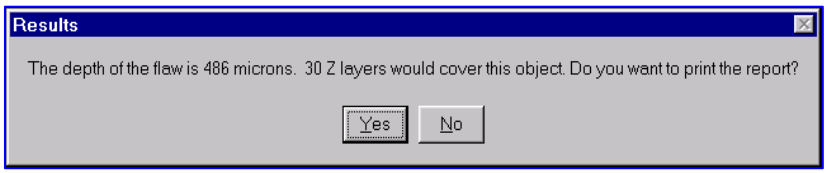


***Figure 4***: *Message box prompted after Z evaluation analysis.*