



InfiniteFocus SL Application Note

Full Report Available at <https://bit.ly/37NFA7X>

Application: Printing Plate
Pattern & Texture measurement

Bruker alicon

Bruker Alicona is the leading global supplier of optical metrology solutions based on the principle of Focus Variation.

Focus Variation works on the basis of moving a focal plane over a surface and collecting robust 3D data which can then be used to measure geometric form and surface finish from a single optical sensor.

Measurement processes can be fully automated and provide GD&T measurement capabilities across all industrial & medical sectors.

The systems are in use in Industry, Industrial Research, Universities and production facilities globally.

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Introduction

In this measurement report summary, we describe the measurement of 4 different surfaces (patterns). The requirement is to measure both the surface texture and the pattern geometry. The full report can be seen at <https://bit.ly/37NFA7X>

Measurement Task

The printing plate to be measured has 24 different surfaces (patterns) are applied and the requirement is to measure the four corners as shown in the illustration below.

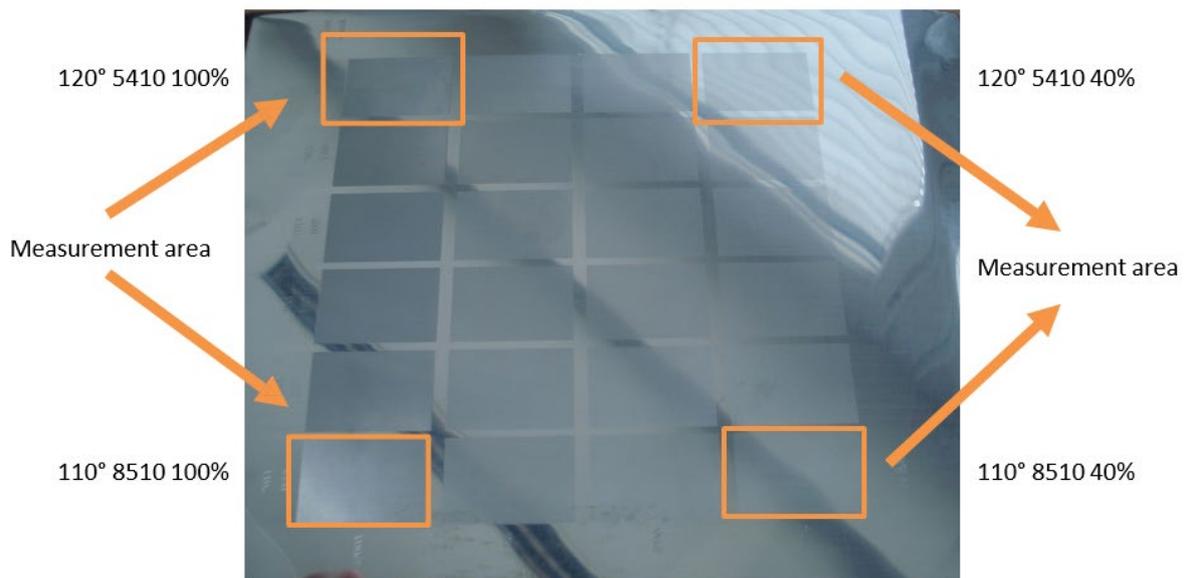
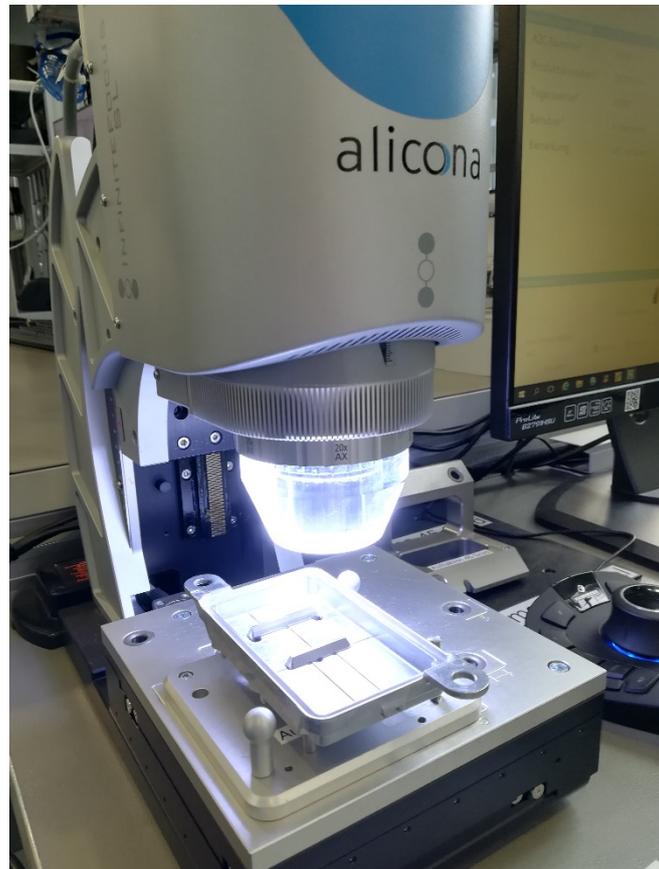


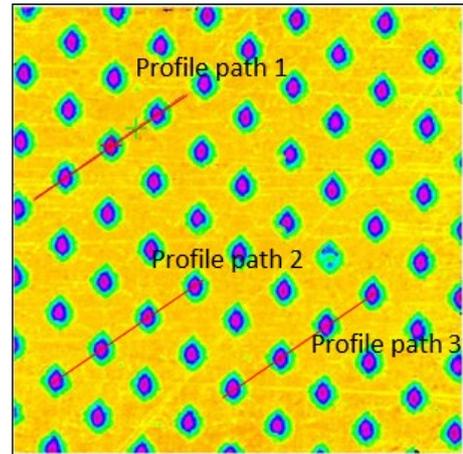
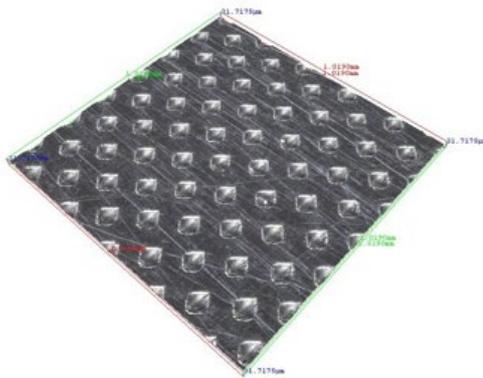
Figure 1.1: Picture of sample with measurement area

The system used to perform this measurement is the Bruker Alicona SL system, this is an optical 3D metrology system that allows the measurement of roughness of an area. This, unlike tactile profile-based measurement allows the automatic measurement of 3D texture data and 3D geometry data.

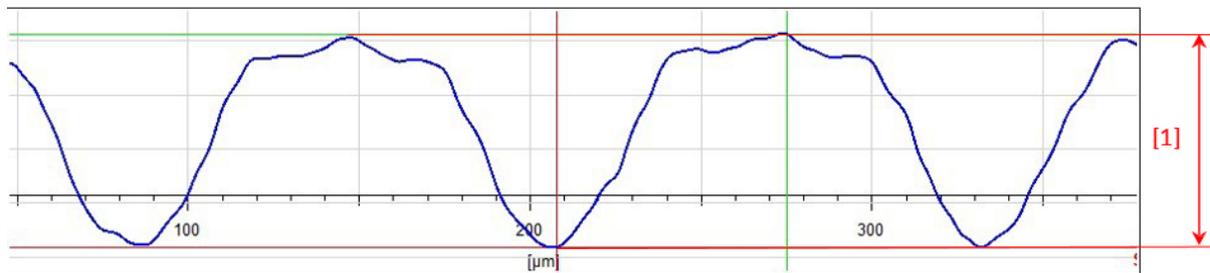
The picture below shows the set up for measurement of the plate held in place on a jig. This ensures that each measurement position can be reached and repeated for automation purposes.



In use a 3D model is taken of the surface to be measured and is displayed in real colour or pseudo colour related to height as shown below. This sample is 110° 8510 40% and profile lines are extracted to measure the cup depth at 3 different positions.



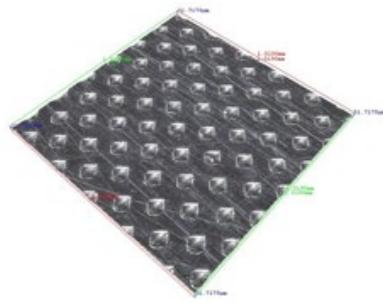
The extracted profile can then be measured as shown below (profile path 1)



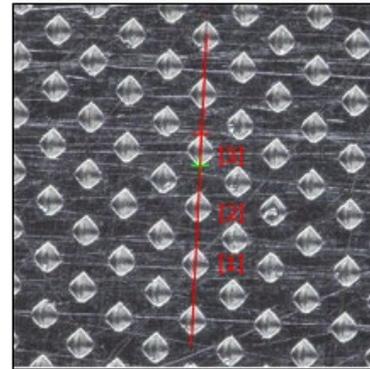
Exemplary: profile diagram profile path 1 (unequal axis scaling)

Measurement	Result	Unit
[1] Cup depth profile path 1	18,2	μm
[2] Cup depth profile path 2	17,1	μm
[3] Cup depth profile path 3	18,1	μm

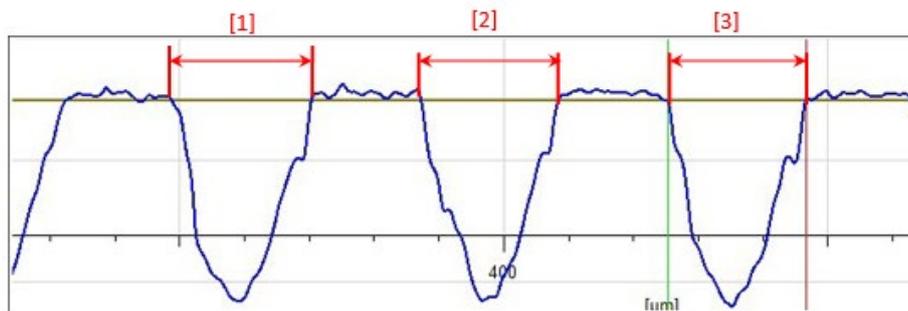
The extracted profile line can be drawn in any position enabling the measurement of widths on the diagonal as shown below, this process is then repeated on all sample surfaces (see full report)



Surface dataset, realcolor



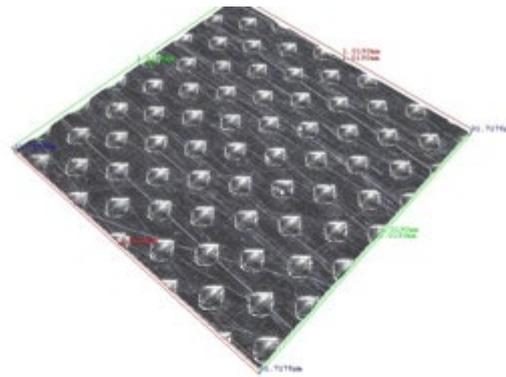
Profile path, 2,5µm width



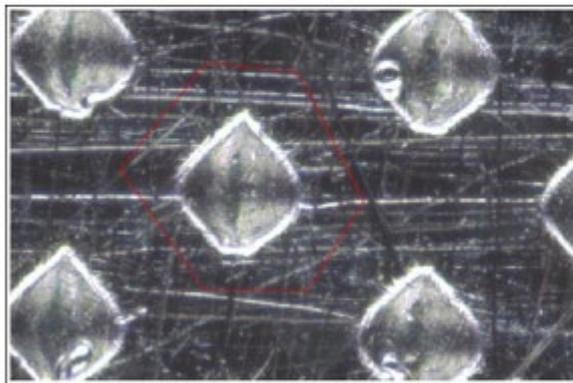
Profile diagram (unequal axis scaling)

Measurement	Result	Unit
[1] Cup diagonal 1	88,5	µm
[2] Cup diagonal 2	89,1	µm
[3] Cup diagonal 3	85,4	µm

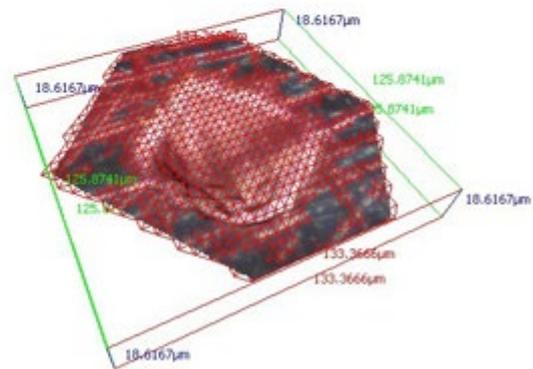
Using the same dataset, it is possible to measure the volume of each single cup as shown below.



Surface dataset, realcolor



Selected area



Volume measurement, soap film mode

Messung	Result	Unit	Description
Volume	30886,2	μm^3	Volume of a single cup

Again using the same dataset it is possible to measure surface texture of each one with results listed below.

Measurement results - IF-ProfileRoughnessMeasurement

Measurement	110° 8410 40%	110° 8410 100%	120° 5410 40%	120° 5410 100%	Unit
Rz profile path 1	10,96	28,59	29,02	54,49	μm
Rz profile path 2	12,20	33,53	31,98	53,97	μm
Rz profile path 3	15,84	36,59	32,12	54,71	μm

Measurement results - IF-SurfaceTextureMeasurement

Measurement	110° 8410 40%	110° 8410 100%	120° 5410 40%	120° 5410 100%	Unit
Sa	2,99	8,72	5,55	13,84	μm
Sz	22,91	36,58	41,48	70,33	μm
S10z	21,73	42,78	39,25	65,66	μm
Smr1	6,43	0,54	4,49	0,14	%
Smr2	69,30	60,32	66,31	65,72	%
Vmp	0,02	0,04	0,03	0,06	ml/m ²
Vmc	2,72	11,29	4,56	17,59	ml/m ²
Vvc	1,24	9,21	2,25	15,36	ml/m ²
Vvw	1,14	1,31	2,29	2,18	ml/m ²
Lc	800	800	800	800	μm

Conclusion:

Optical non-contact metrology is the ideal solution for measurement of these delicate plates. The ability to use one easily created dataset for the measurement of finish, profile and volume makes it an easy process in the manufacture of these plates.

As with all Bruker Alicona systems a user does not need a knowledge of metrology making it an ideal solution for shop floor use.

The report shows clearly that all four patterns have totally different surfaces, which can be clearly derived from the measurement results summarized above and the the different parameters such as Rz, Sz are distinctive between the different patterns.

The full report is available at <https://bit.ly/37NFA7X>