

Smart Surface Preparation™

For Structured Light Metrology

While Adding Zero Dimensional Error

Introduction: This document describes the effect of Smart Surface Preparation™ (SSP™) process and shows the results for the purpose of Structured Light Metrology (SLM) object digitization using the patent pending Level 3 Inspection (L3I) method. It also offers it for sale for anyone who wants to achieve these results.

1.0 PURPOSE:

To describe surface preparation method, process and application as related to structured light metrology digitization on a variety of materials and surface finishes.

2.0 SCOPE:

This method applies to all parts, of any material of construction and any surface finish, where the part surface must be prepared in order to achieve accurate digitization, under the laws of physics and optics.

3.0 VALIDATION DOCUMENTATION:

Early in this SSP process development, our engineers worked directly with a major jet engine OEM to establish the criteria and design of experiment (DOE) to determine surface preparation SLM measurement results influence, perform comprehensive correlation to traditional CMM measurement methods, and objectively prove that this refined proprietary process adds no measurable dimensional deviation. We have continued to improve this process and formulation ever since, with strong results.

Through a comprehensive series of scanning and 3D microscopy validation steps we have proved that our patent pending method, process and formulation for surface preparation does not add measurable thickness to the geometry of a part in such a way that would negatively impact precision metrology. This is in distinct contrast to the conventional “coating” and “spray” applications that are typically promoted by the SLM equipment brokers in this field.

The high-resolution high-magnification photographic evidence to support this position is included on the next page 5 pages.

CAGE: 5UXW8

Figure 1 shows the formula settles into the low spots of the surface and effectively reduces shine without an adverse affect on dimensional charesterics. This is a view of the internal cavity of an airfoil casting with a turbulator strip in the center of the figure.

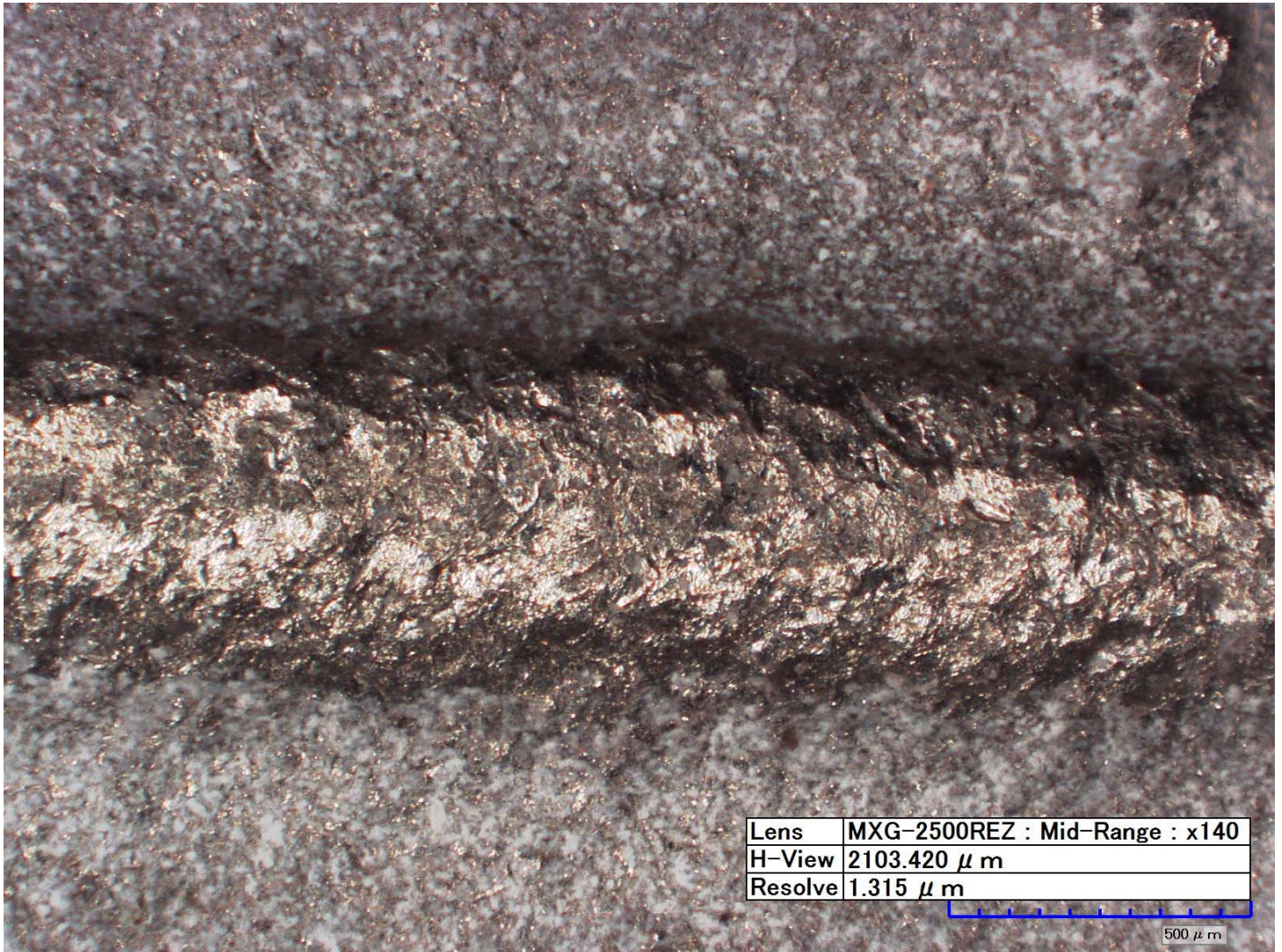


Figure 1
Formula Applied to Turbine Airfoil Casting
140X Zoom, 500 micron scale (0.010")

CAGE: 5UXW8

Figure 2 shows the formula settles into the low spots of the surface and effectively reduces shine without an adverse affect on dimensional characteristics. This is a view of porous (in-growth) coating on an orthopaedic implant.

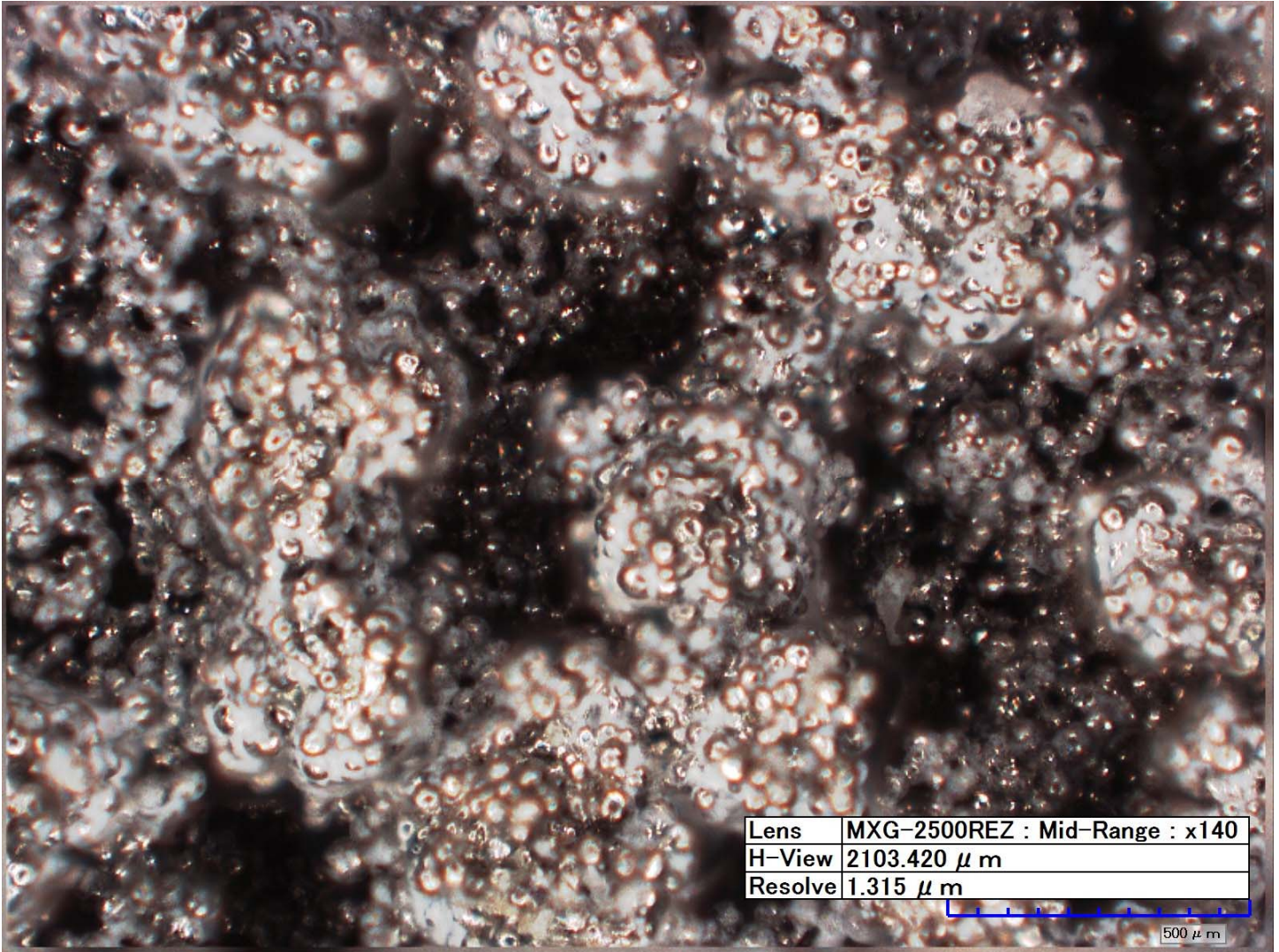


Figure 2
Formula Applied to Porous Coating
140X Zoom, 500 micron scale (0.010")

CAGE: 5UXW8

Figure 3 shows the surface preparation process and formula does not completely cover the base material and is transparent; effectively reducing shine without an adverse affect on dimensional characteristics. This is a view of highly polished, mirror-finished surface.

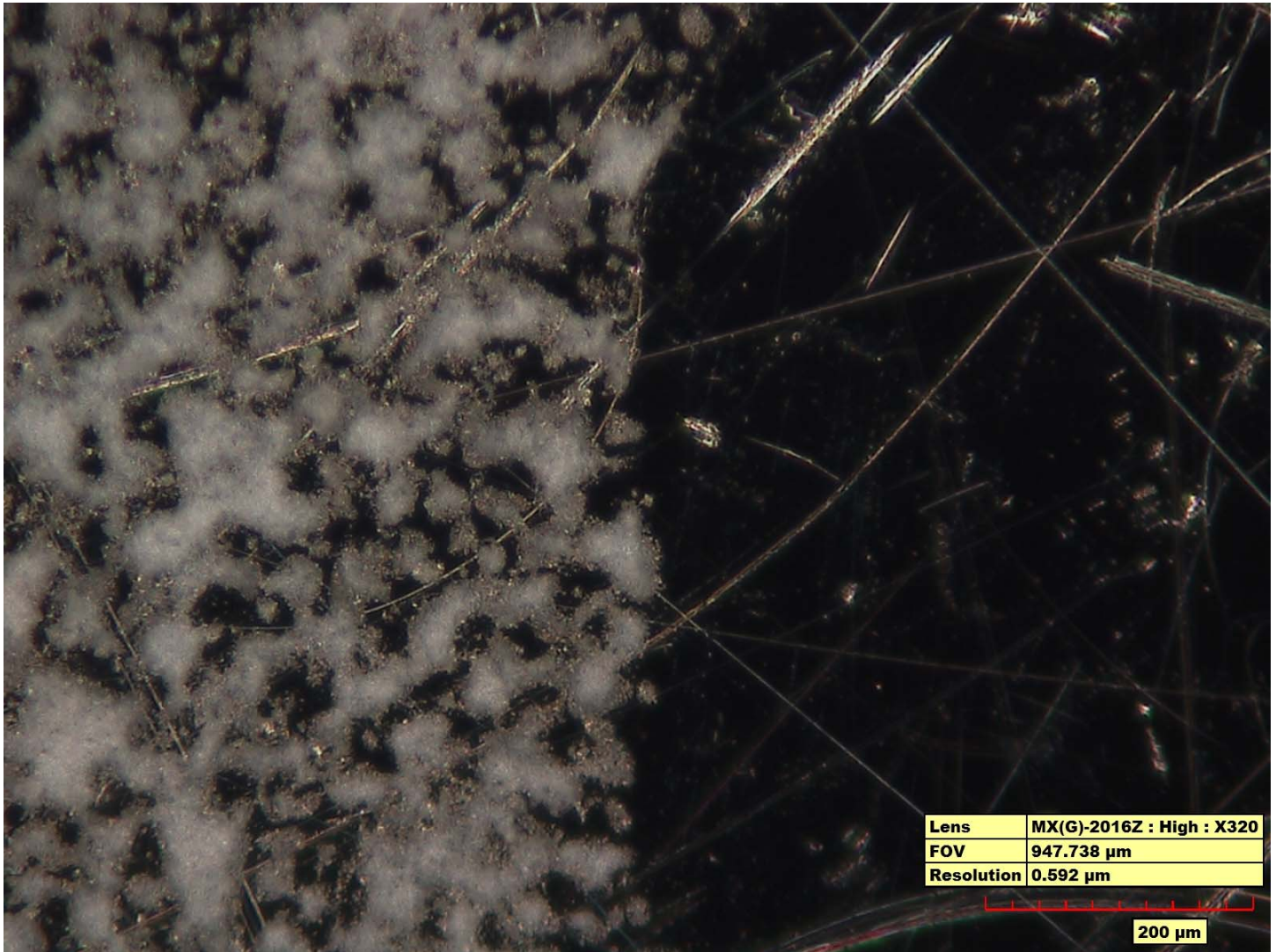


Figure 3
Formula Applied to Polished Surface
320X Zoom, 200 micron scale (0.008")

CAGE: 5UXW8

Figure 4 shows the formula does not completely cover the base material and is transparent; effectively reducing shine without an adverse affect on dimensional charesterics. This is a view of high polished, mirror-finished surface.

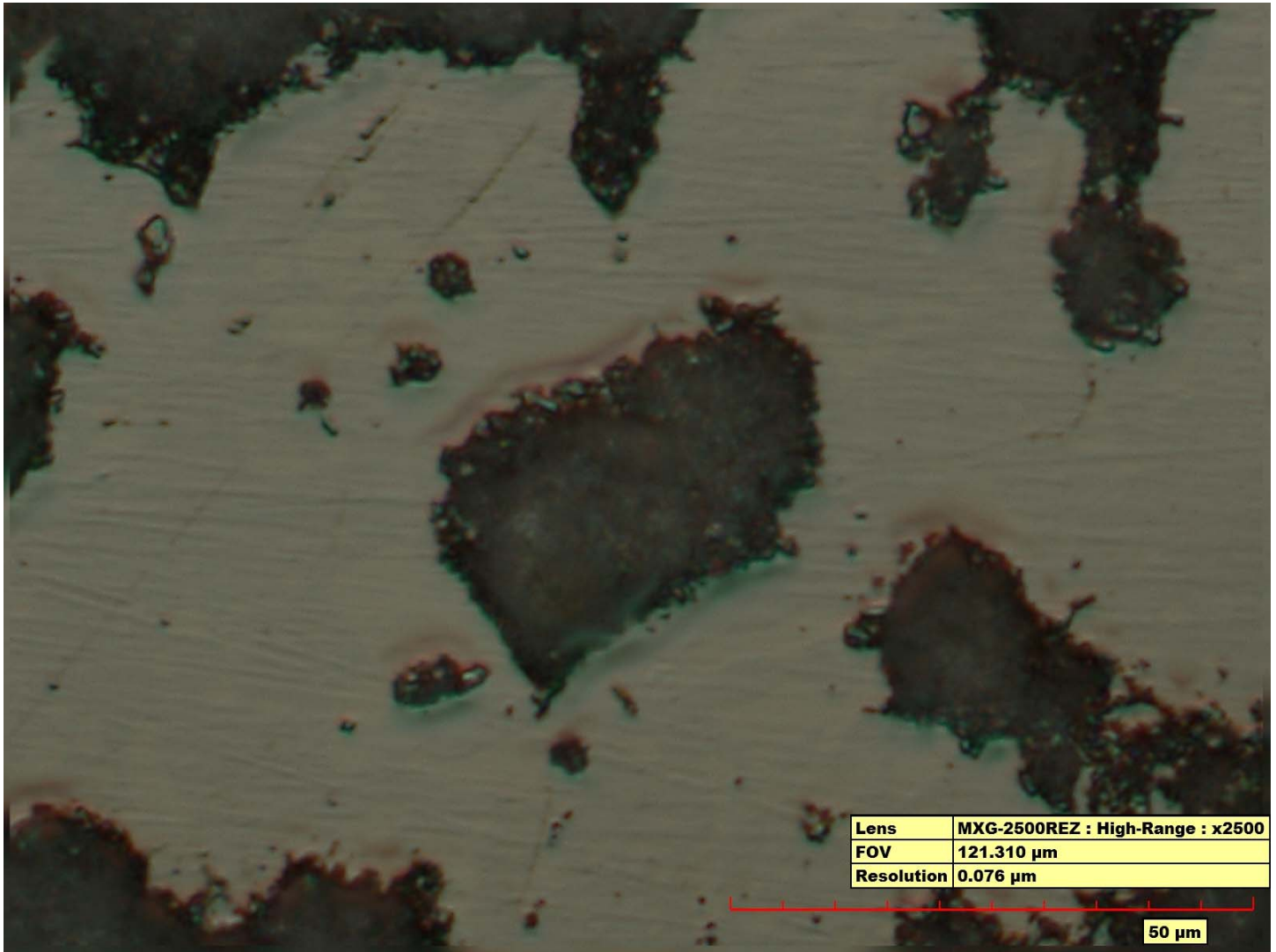


Figure 4
Formula Applied to Polished Surface
2500X Zoom, 50 micron scale (0.001")

CAGE: 5UXW8

Figure 5 shows the formula does not completely cover the base material and is transparent; effectively reducing shine without an adverse affect on dimensional characteristics. This is a view of high polished, machined surface.

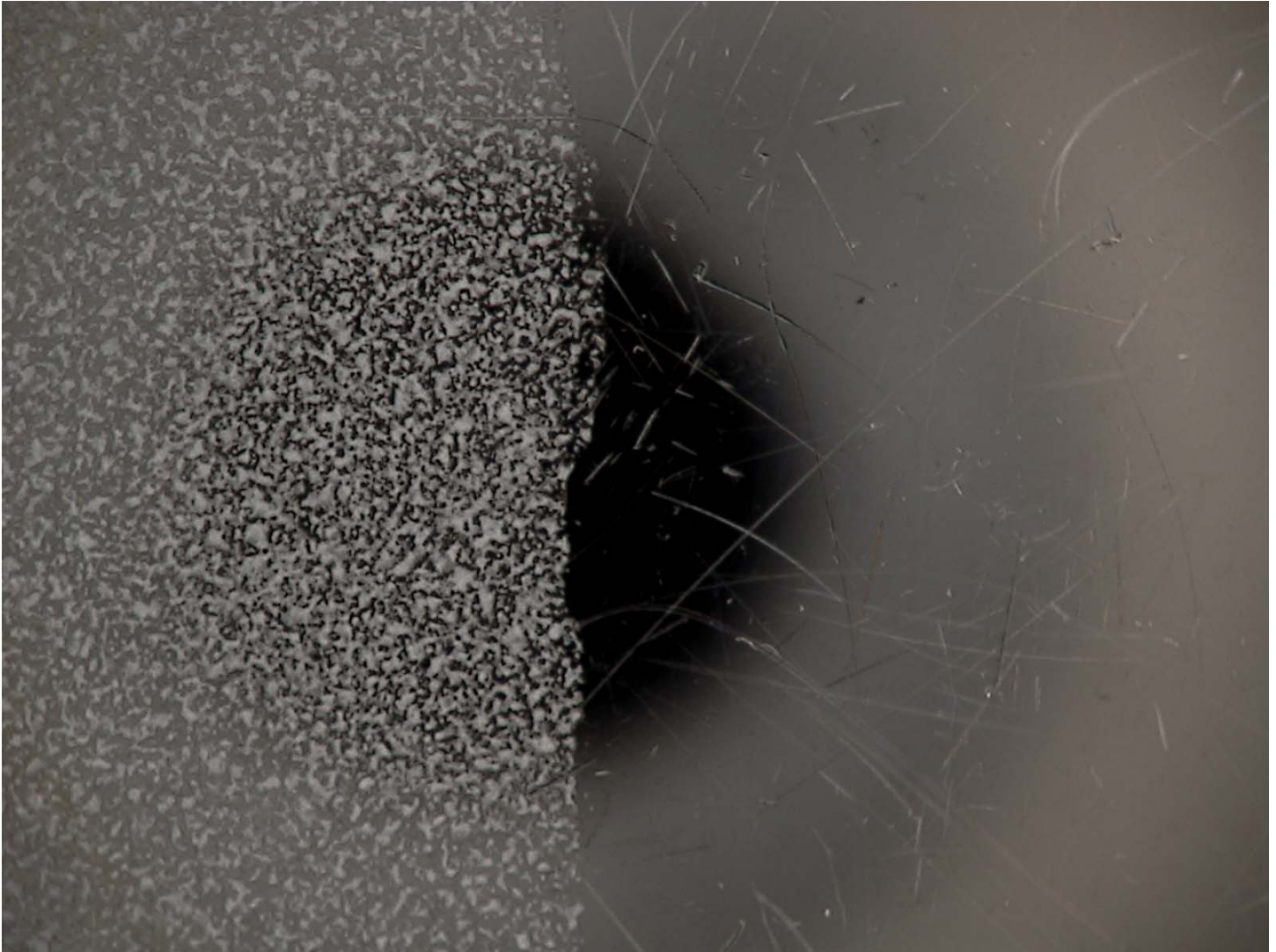


Figure 5
Formula Applied to Polished Surface
50X Zoom, No Scale

CAGE: 5UXW8

4.0 COMMERCIAL OFFERING:

Level 3 Inspection LLC (L3I), and our automated turnkey Computer Aided Inspection (CAI) systems division, Smart Inspection Systems LLC (SIS), are pleased to offer this proprietary and patent pending Smart Surface Preparation[™] (SSP[™]) equipment, solution and process to Structured Light Metrology (SLM) users who desire higher integrity in their metrology results. This is highly recommended for anyone seeking accurate measurements where the dimensional tolerances are ± 0.010 " or tighter, especially when the desired measurement system accuracy is ten percent (10%) of the tightest tolerance or better, as is the precision manufacturing field standard.

Smart Surface Preparation[™] (SSP[™]) – Manual Operation System \$.

Manual Operation System Includes:

- Evaporator, Atomizer, Exhaust Hood & Fan
- Process Training at L3I Facility (1 day, hands-on, working with your parts)
- 2 Pints of Surface Preparation Solution[™]

Smart Surface Preparation[™] (SSP[™]) – Automatic Operation System \$.

Automatic Operation System Includes:

- Evaporator, Atomizer, Exhaust Hood & Fan
- Integrated Part Presenter for Automated Operation
- Integrated Manual Atomizer for Touch-Up or Back-Up
- Process Training at L3I Facility (1 day, hands-on, working with your parts)
- 4 Pints of Surface Preparation Solution[™]

Surface Preparation Solution[™] (SPS[™]) – Pint Bottle, Each \$.

Smart Surface Preparation[™] (SSP[™]) – Application Demonstration \$.

Application Demonstration Includes:

- Receiving Report of your part at our Lab, including photographic documentation
- Partial Part SSP[™] Application (Possibly complete, subject to part size)
- Partial Part SLM Scan to Demonstrate Effectiveness, .STL file provided
- Returning your SSP[™]-treated part to your facility, using your shipper account
- Follow-up Process and Results Review via WebEx

Questions and orders are welcome at 772.405.7502 or sales@level3inspection.com.

Thank you for your interest in our advanced proprietary and advantageous CAI solutions and processes.