Surface Finish Optimization for Advanced Manufacturing by Optical Profiler

A Bruker Online Symposium

Wednesday, June 17th, 2020

5:00 - 7:00 PM CEST | 8:00-10:00 AM PDT

Symposium Speakers

- Donald K. Cohen, Michigan Metrology, LCC (USA)
- Raphaël Deltombe, Morphomeca (LAMIH, Valenciennes, France)

Bruker Speakers

- Samuel Lesko Bruker
- Robert Cid, Bruker

Symposium Schedule

Time	Session
5:00 PM	Symposium Introduction by Session Chair ■ Robert Cid, Bruker
5:05 PM	Finishing process for 3D printed polymer surface ■ Samuel Lesko, Bruker
5:25 PM	Surface texture and paint adhesion ■ Donald K. Cohen, Michigan Metrologyr
5:45 PM	What texture for what functionality and how to characterize it? ■ Raphaël Deltombe, Morphomeca
6:25 PM	Q&A
7:00 PM	End of symposium

Donald K. Cohen
Michigan Metrology, LCC

Raphaël Deltombe
Morphomeca

Samuel Lesko
Bruker

Robert Cid
Bruker

Symposium Registration

To register for this event, click the button below or visit the URL in your web browser. If you have any questions, please contact us at productinfo@bruker.com.

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Innovation with Integrity

Optical Microscopy

Surface Finish Optimization for Advanced Manufacturing by Optical Profiler

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What texture for what functionality and how to characterize it?
Raphaël Deltombe, Morphomeca (LAMIH, Valenciennes, France)

Abstract

The functional surfaces contain all spatial scales but the texture measurements capture only some of this information limited by the physical ability of the exploration equipment.

The surface functionalities investigations such as abrasion resistance, biocompatibility, wear resistance, gloss, electrical loss...cannot be done in a trivial way by simply measuring a surface and computing parameters. Thus, as Bo Dahlbom's quote "You can't do much carpentry with your bare hands, and you can't do much thinking with your bare brain," it is necessary to set up a smart guide to reach the texture investigation.

The SMART methodology adapted for texture functionality research allows to guide researchers and engineers towards the expected answers. This methodology breaks down into different steps:

Scale: What is the physical phenomenon scale in its environment?

Measurability: What is the most suitable exploration tool?

Accessibility: Can we explore the surface safely?

Reliability: Which filters and morphological parameters are most representative of my functionality?

Time: How long will my exploration and analysis take?

Raphaël Deltombe,
Morphomeca

Raphaël Deltombe, Morphomeca

Raphaël Deltombe has a PhD in mechanical science and hold CNRS's research engineer position at Morphomeca team lead by Prof. Maxence Bigerelle. His main research activities are centered on exploration and analysis of microscopic texture applied to industrial manufacturing pieces in order to identify specific roughness signature as a function of environment parameters (Process parameters, lifetime...).

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Surface texture and paint appearance

Donald K. Cohen, Michigan Metrology

Abstract

The paint appearance on cars, trucks and appliances can be affected by many variables related to the multiple steps in preparing and painting the surfaces. In some cases, the base substrate may consist of surface texture characteristics that affect the final paint appearance. This presentation covers the use of 3D optical profilometry, and multi-spectral analysis, to demonstrate correlation between the base substrate texture features to the final paint appearance.

Donald K. Cohen, Michigan Metrology, LCC

Donald Cohen has Ph.D. in Physics and Optical Sciences from the University of Arizona. Since 1994, he has established servicing company Michigan Metrology, LLC to help engineers and scientist solve problems related to "leaks, squeaks, friction, wear, appearance, adhesion and other issues", using 3D Surface MicroTexture Measurement and Analysis. Prior that, he held position at IBM before joining Wyko corporation to develop 3D surface texture metrology instrumentation.

Donald K. Cohen
Michigan Metrology, LCC

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