

# Workshop

## “Challenges on the measurement of sparkle and graininess”

PERCEPTION

AUTOMOTIVE

DISPLAYS

COATINGS

MEASUREMENT  
SCALES

NMIS FACILITIES

INSTRUMENTS

VISUAL  
EXPERIMENTS

Espoo, Finland,  
5th November 2019



Organized by:



with presentations from:



Universitat d'Alacant  
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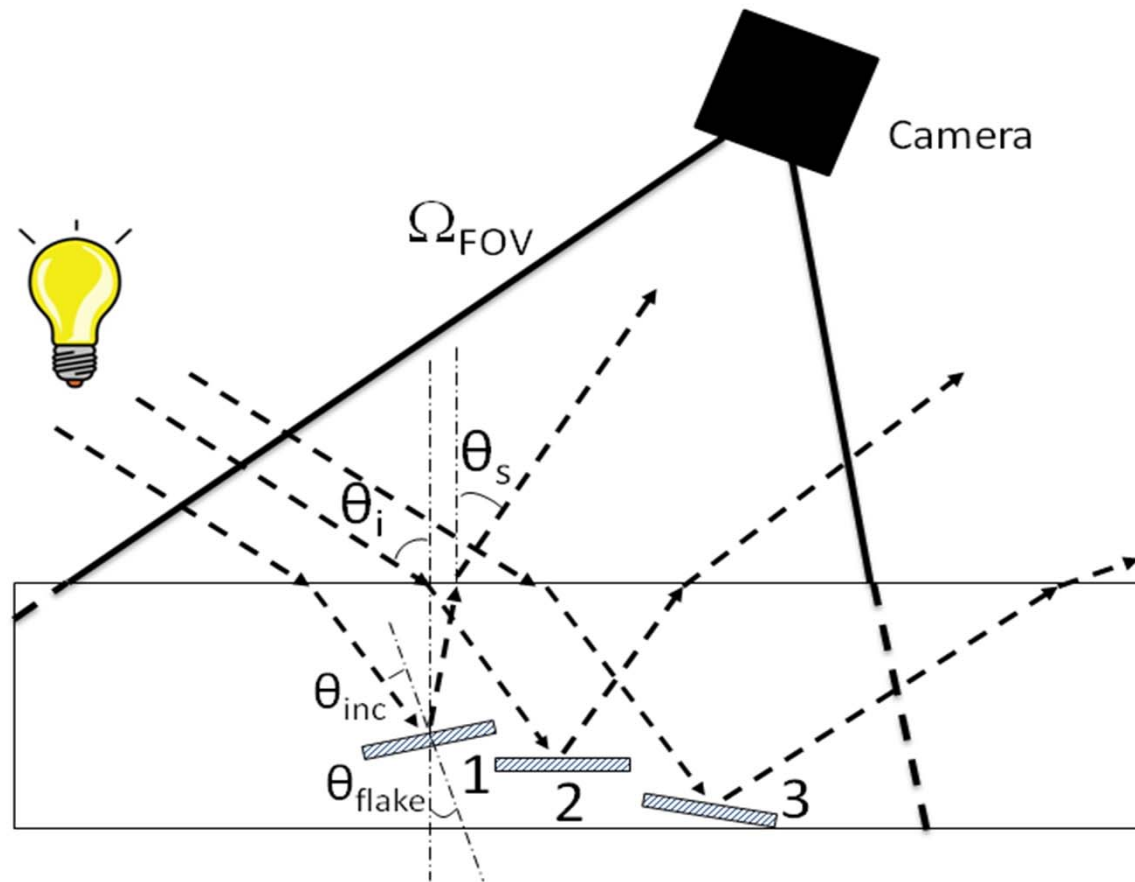
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# *Sparkle and graininess*



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## Challenges

1. National metrology institutes (NMIs) have to propose and validate a methodology for measuring **the bidirectional texture function (BTF) for sparkle, and a spatially resolved hemispherical-directional reflectance quantity relevant for graininess.**

# *Sparkle and graininess*

## Challenges

2. Universities and other research centers have **to test methodologies for obtaining visual data, and provide them.**

# *Sparkle and graininess*

## Challenges

3. To agree, within an international and normative organism, **measurement scales for sparkle and graininess, and their texture difference formulae** (by comparing reflectance and visual data).

## NEWS

### Measurement of sparkle: EMPIR proposal for new CIE technical committee accepted



Red Sport Car on a Highway

These standardised approaches will help manufacturers produce a new generation of instruments, giving many industries, including automotive and cosmetics, better control of product appearance and higher customer satisfaction.

#### The new CIE technical committee

The International Commission on Illumination is devoted to worldwide cooperation and the exchange of information on all matters relating to the science and art of light and lighting, colour and vision, photobiology and image technology.

The CIE Board of Administration accepted the proposal initiated by the project consortium for the creation of a [CIE Technical Committee on the measurement of Sparkle and Graininess](#) in November 2017. The Technical Committee will provide a methodology to measure sparkle and graininess, and to develop a measurement scale.

Dr Alejandro Ferrero from [CSIC](#) and a member of the EMPIR project consortium has been appointed Committee Chair.

International Commission on Illumination (CIE) new technical committee on the measurement of sparkle and graininess

#### The project

EMPIR project 'Bidirectional reflectance definitions' (16NRM08, BiRD) is working to carry out measurements on different visual effects and independently validate them, and use these measurements to propose standards and guidance, as well as agreeing formats for measurement data. It will make recommendations for the characterisation of surface colour, gloss, sparkle and graininess effects and agree new approaches for measuring these.

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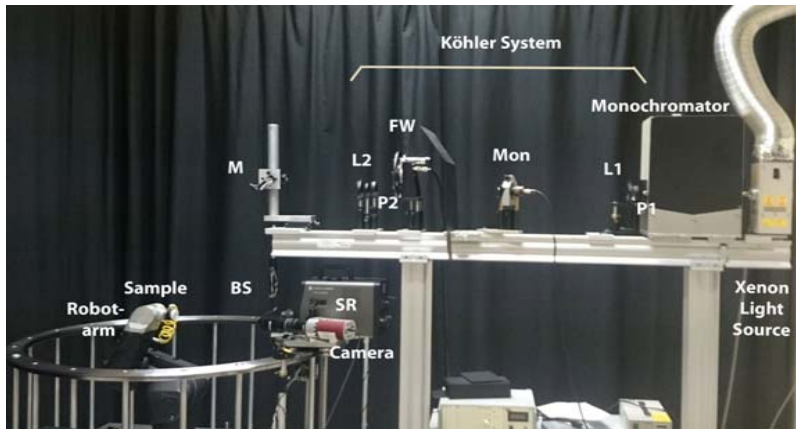
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[EMN for Traceability in Laboratory Medicine has 1st meeting with](#)

# Sparkle

## Goniospectrophotometers



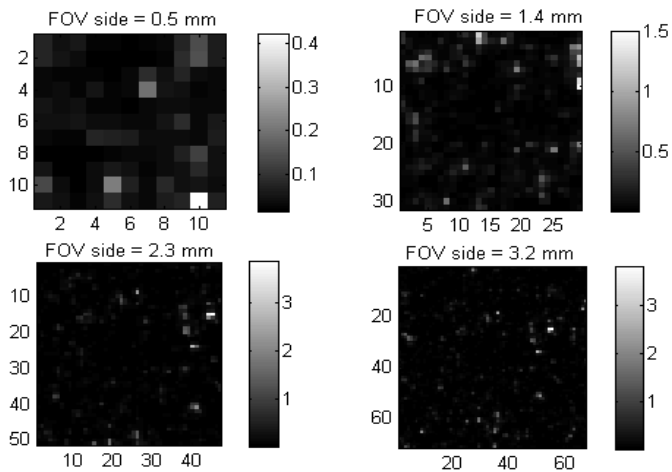
Sparkle difference formula

Visual experiments

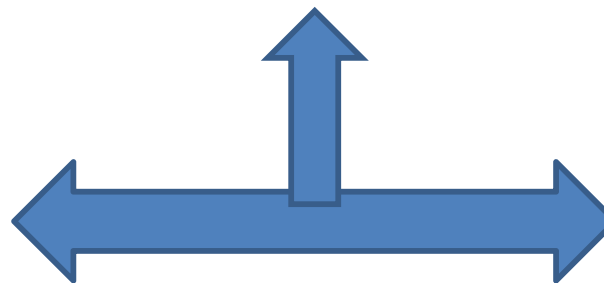


Just noticeable difference

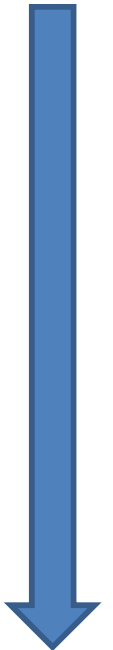
Measurement scale for *sparkle*



measurements



correlation

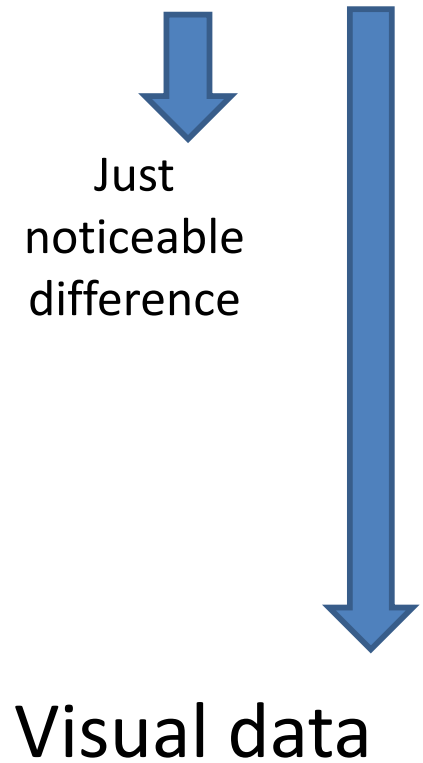


Visual data

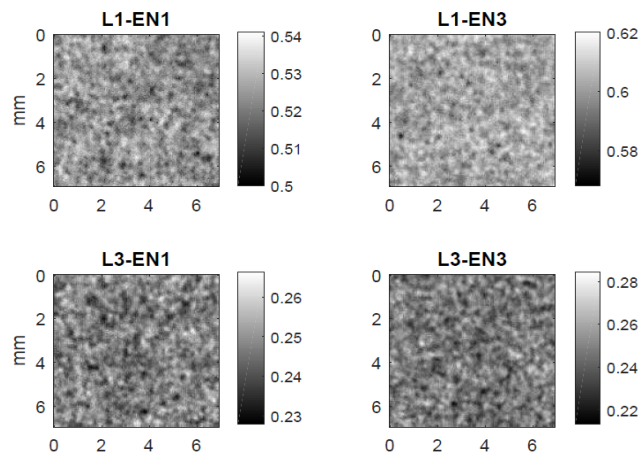
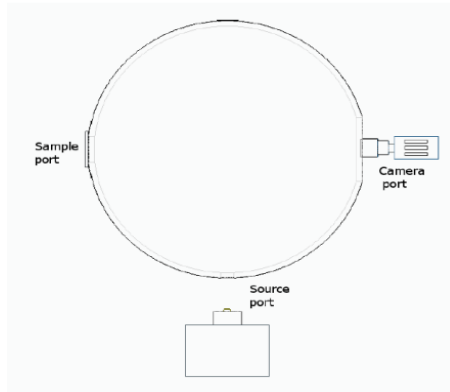


# Graininess

## Visual experiments



## Integrating sphere



measurements

## Graininess difference formula

## Measurement scale for graininess

$$G = V_G(f_1, f_2) \times \left(1 + \frac{a}{\beta^b}\right)$$

## correlation