

VideometerLab for textile analysis





ABOUT US

- Spectral imaging company
- Founded 1999
- Products
  - Lab instruments,
  - Turn-key in-line systems, and
  - R&D projects
- App. 700 imaging R&D projects since 2000
- In-line 24/7 spectral imaging since 2002
- Based in Copenhagen, Denmark
- Partnerships worldwide

OUR LEGACY

1999

The beginnings

Videometer was co-founded by Jens Michael Carstensen and 7-Technologies in 1999, as a spin-off from the Technical University of Denmark. The first patent application was filed.

2000

Project-based

In 2000, Videometer began its project-based activity. During these years, the company's main focus was set on custom-made vision systems for in-line and on-line quality control.

2018

A new era

In 2018, Videometer's structure underwent new developments both in terms of strategy and structure. This year marked the beginning of a new era for the company, in terms of focus on instruments.

2020s

Today

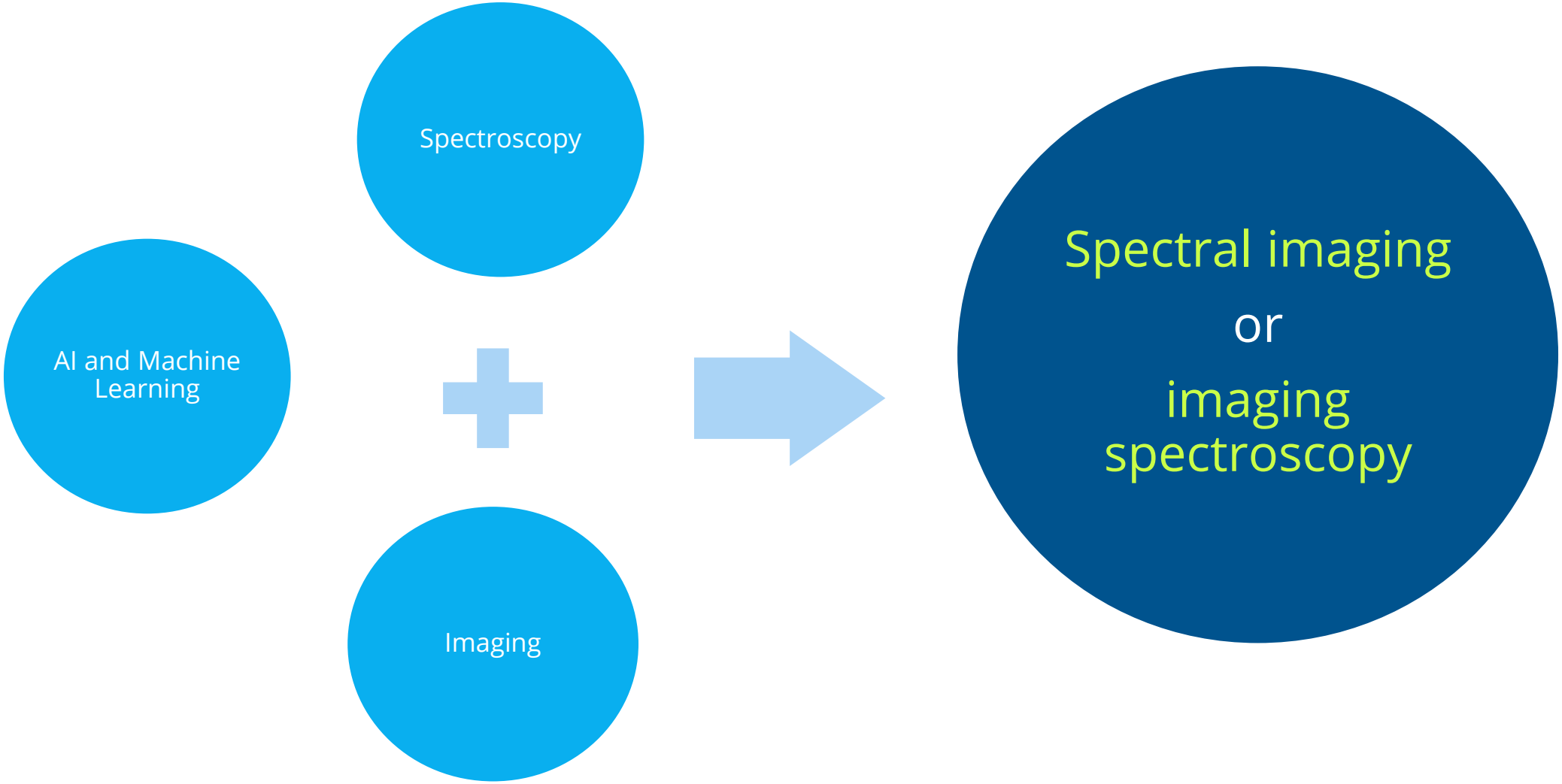
Today, Videometer is a leading provider of spectral imaging solutions worldwide, selling both spectral imaging instruments and custom-made vision systems. Videometer is synonym of excellence and innovation in its field.







SPECTRAL IMAGING



WHAT COLOR IS THE CAR?



APPEARANCE

=

CHEMISTRY

X

PHYSICS

X

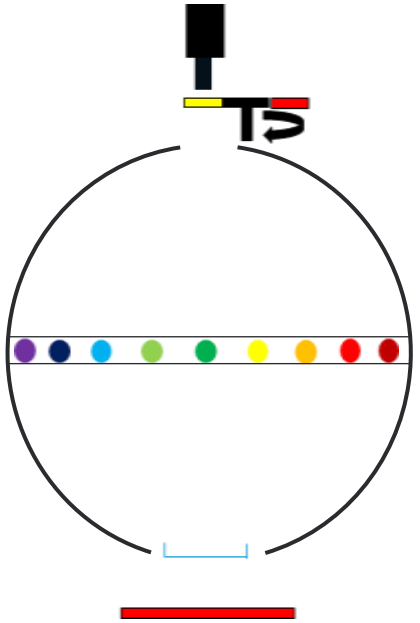
ENVIRONMENT

X

ILLUMINATION

LED BAND SEQUENTIAL SPECTRAL IMAGING





Camera and lens

Emission filter changer

Integrating sphere

LEDs of multiple wavelengths

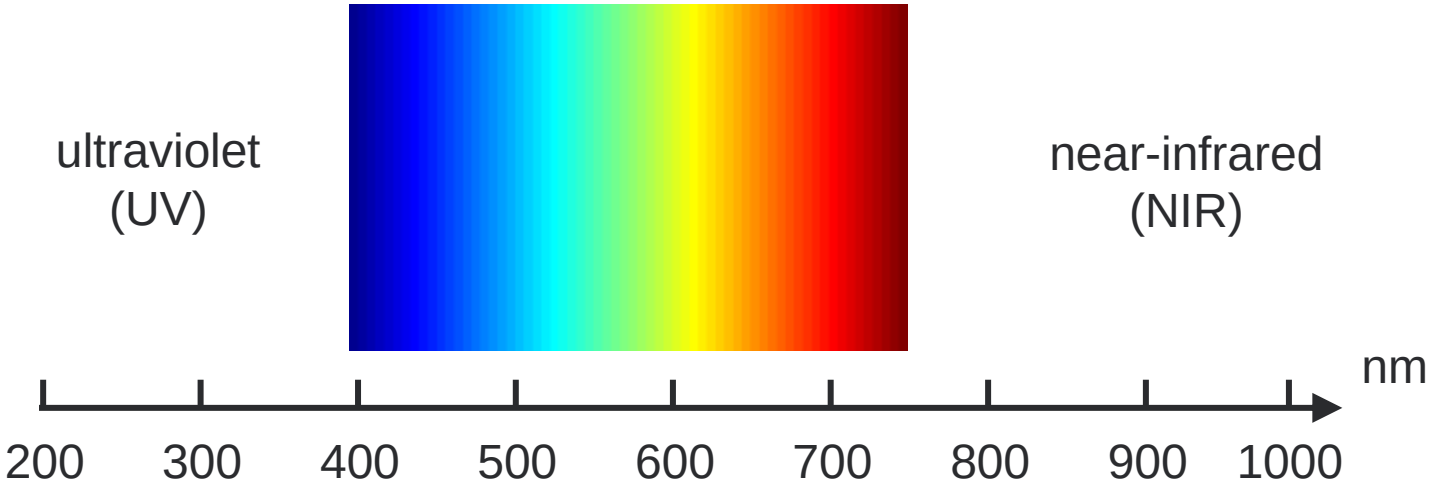
Sample is placed in target opening

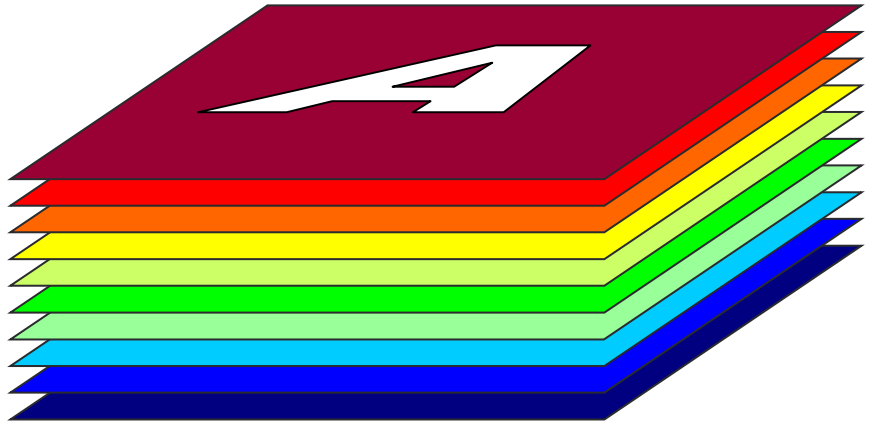
Backlight or background



- LEDs: Stable, durable, large selection, rapidly developing technology
- Up to 20 different high-resolution bands acquired sequentially in 0.5-1.0 seconds
- May be combined with emission filters, backlight, and darkfield illuminant
- Combined reflectance spectral imaging and fluorescence spectral imaging possible!

SPECTRAL IMAGE





N images obtained at N wavelengths

Microbial and plant metabolites	Accurate color assessment and pigment concentration	Pigment baseline, moisture, fat, etc.	Spectral image is typically a large data structure of 100 MB to 10 GB

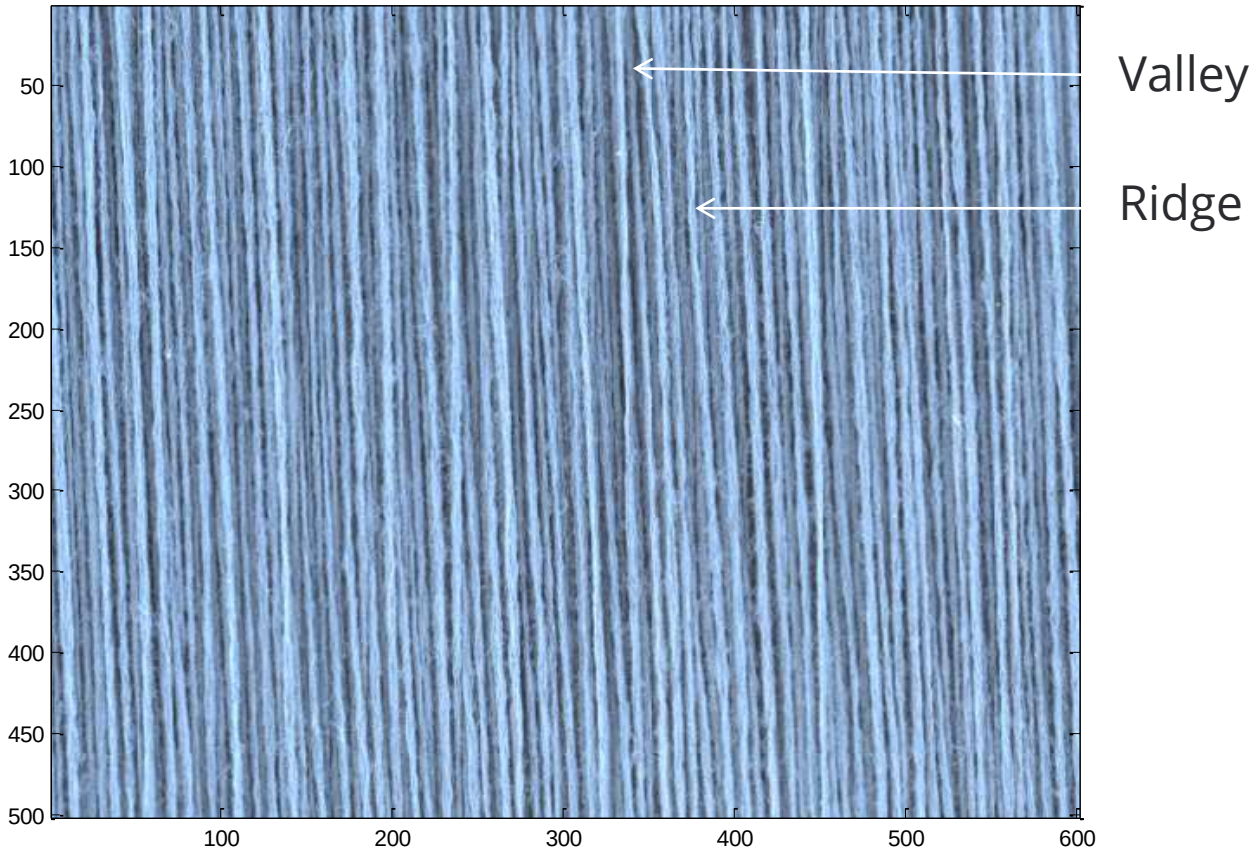
RAW MATERIALS



DYEING PROCESS

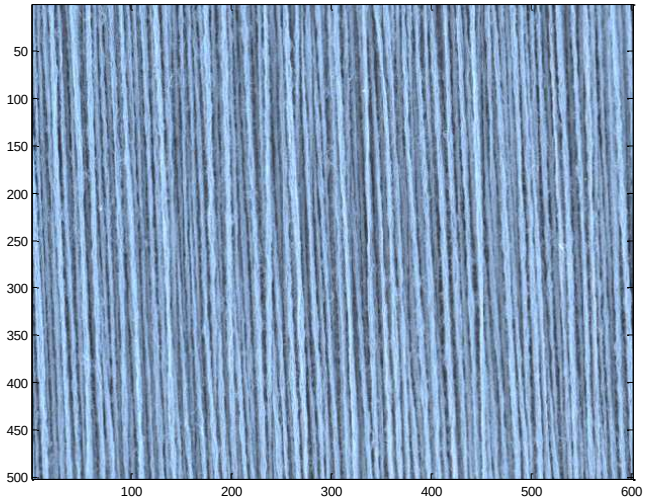


YARN AND FABRIC COLOR

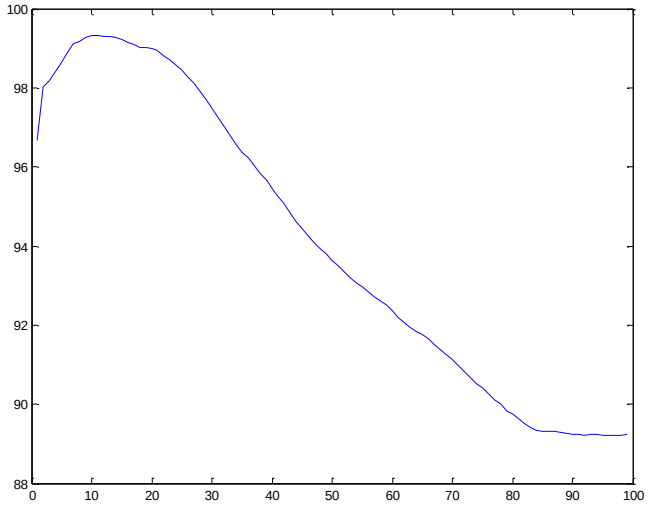


Yarn color is NOT the average color

RIDGE-WEIGHTED COLOR MEASUREMENT



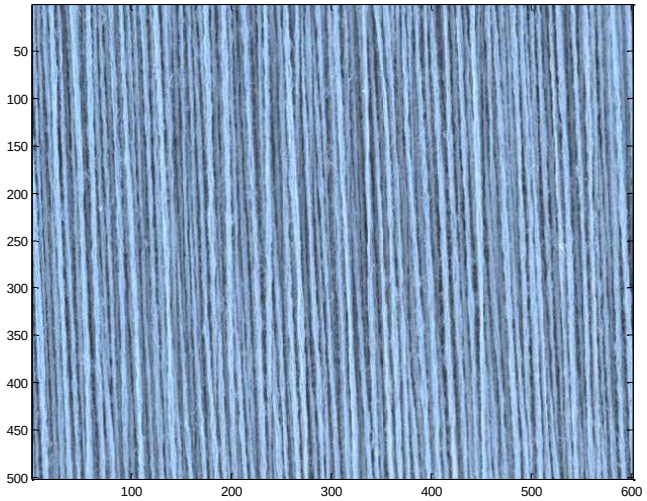
R^2



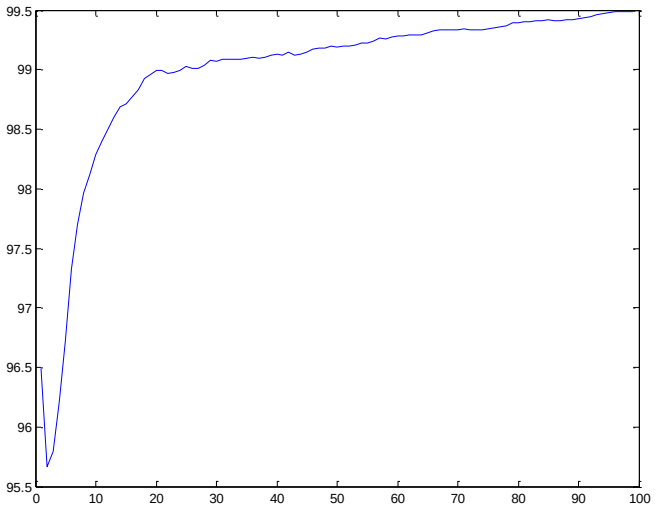
Ridge quantile

- Dose-response trial
- Color strength (L*)
- Dose-explained variation
- R^2=99.34% for ridge-quantile 13%
- R^2=87.3% for conventional color measurement

RIDGE-WEIGHTED COLOR MEASUREMENT



R^2



Ridge quantile

- Dose-response trial
- Color nuance (a*,b*)
- Dose-explained variation
- R^2=99.49% for ridge-quantile 97%
- R^2=94.9% for conventional color measurement

ABRASION AND BACKSTAIN ON DENIM



DOMINATING YARN LOOP SEGMENTATION





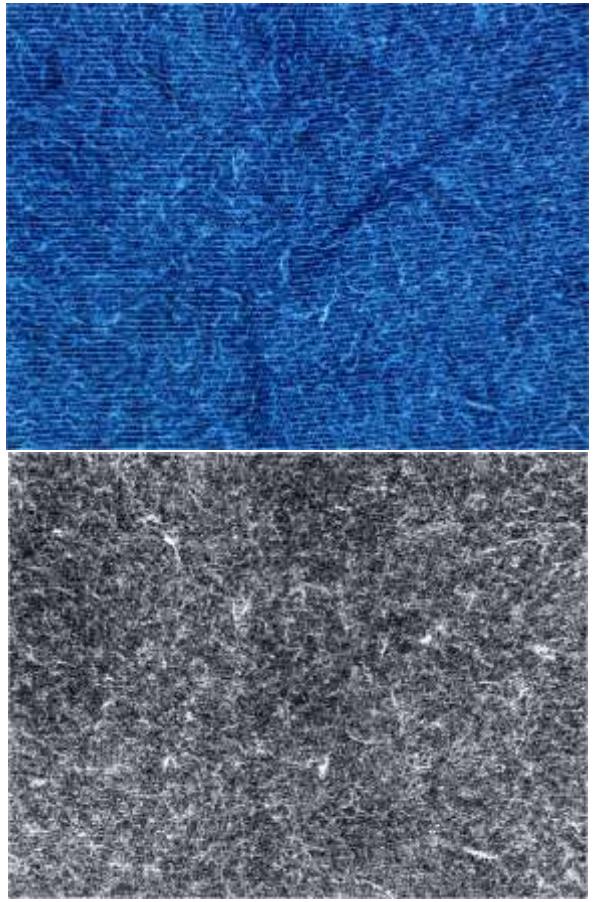
DENIM MEASUREMENTS

Abrasion
- Front dominant loops
- Three quantities
  - Average abrasion
  - Abrasion graininess
  - Abrasion speckle

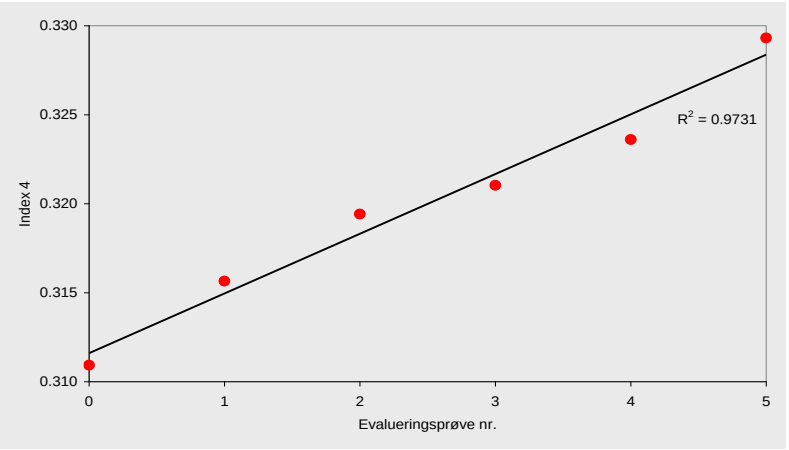
Backstain
- Back dominant loops
- One quantity
  - Average backstain

FUZZ AND PILLS / BIOFINISHING

The amount of ”Fuzz and pills” can be measured by a linear combination of two wavelengths

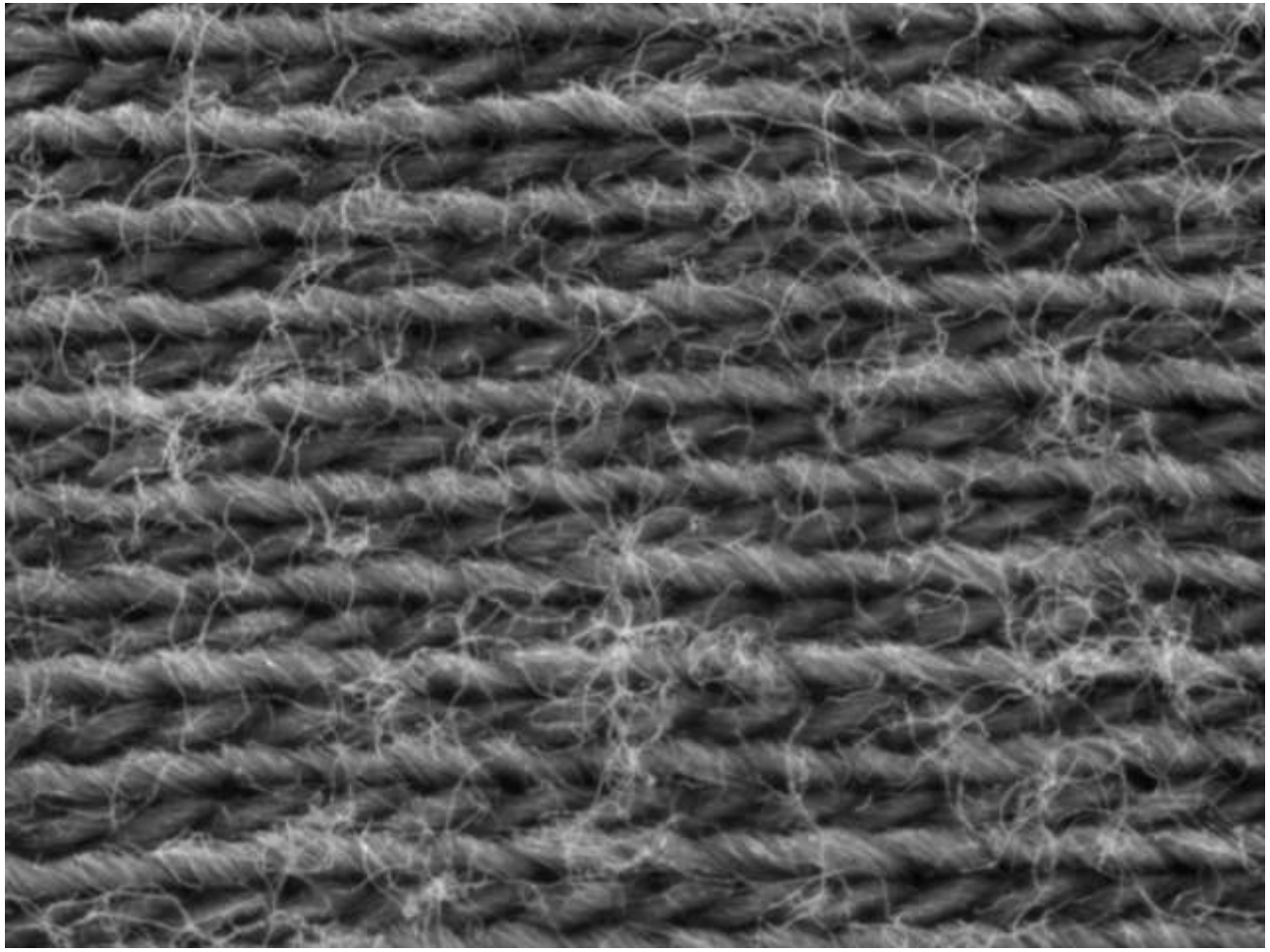


Used e.g. for measuring the efficacy of enzymes in detergents

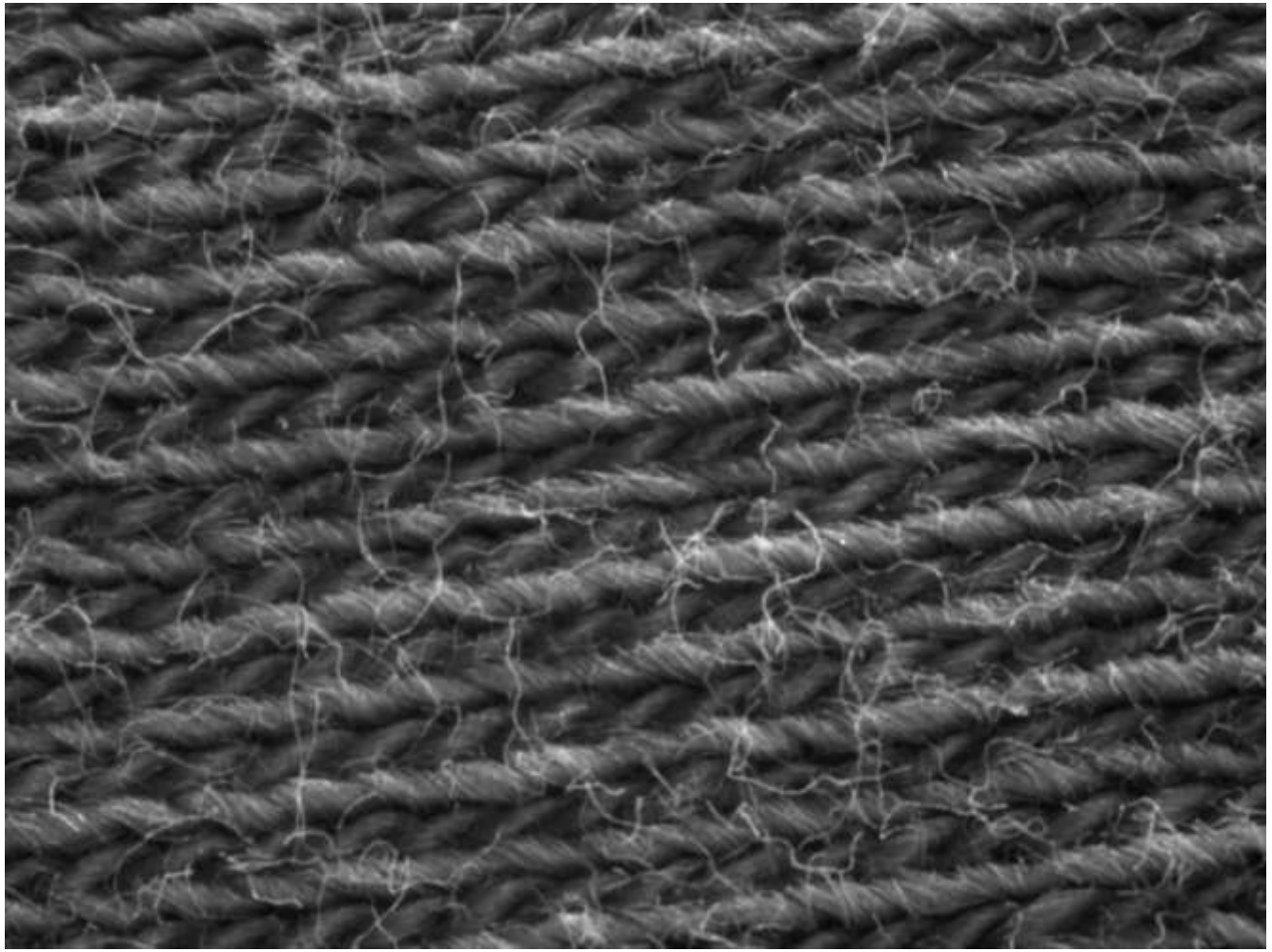


Correlation with human assessment (scale can be linearized if desired)

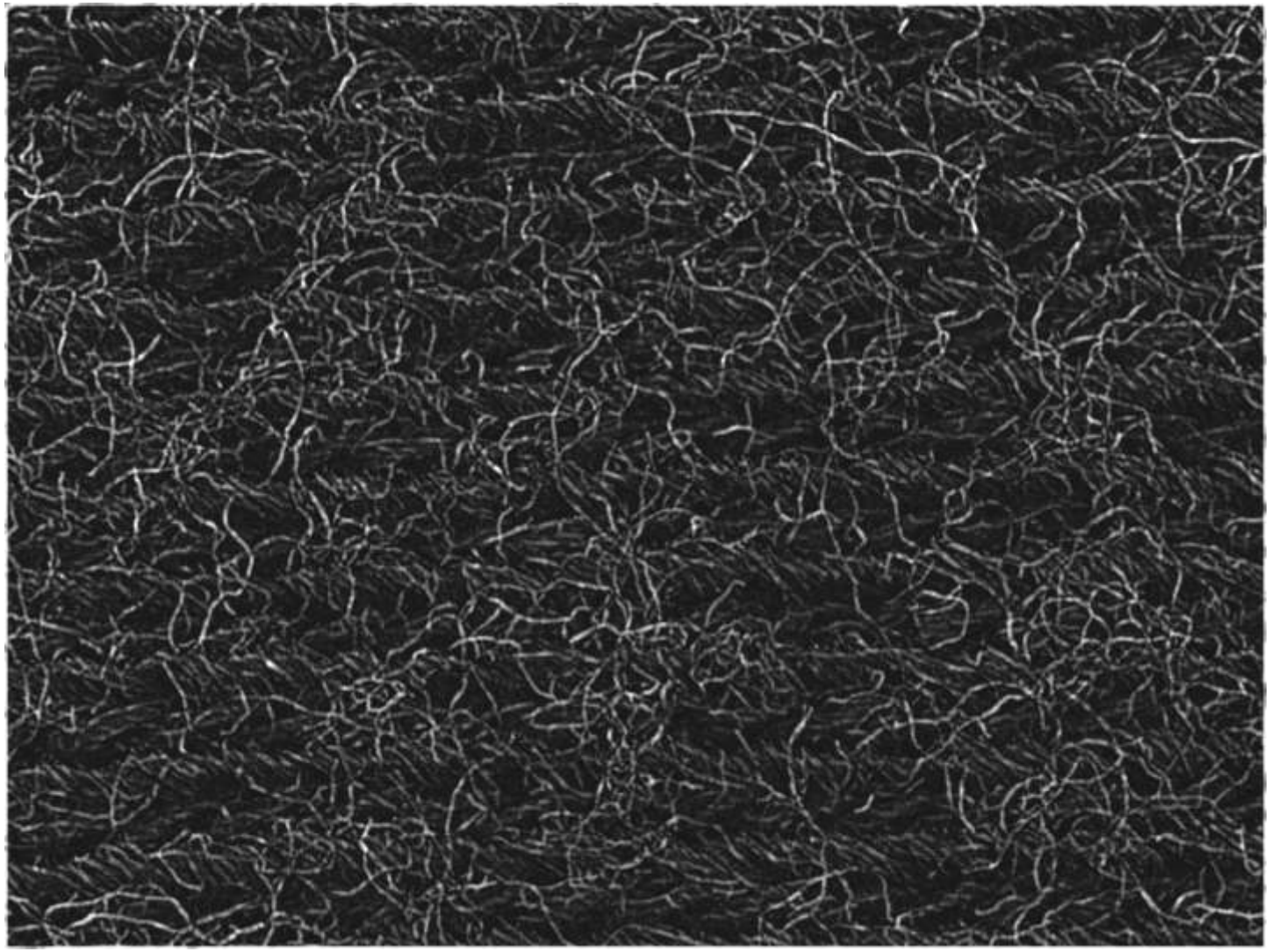
BABYBLUE (NO ENZYME)



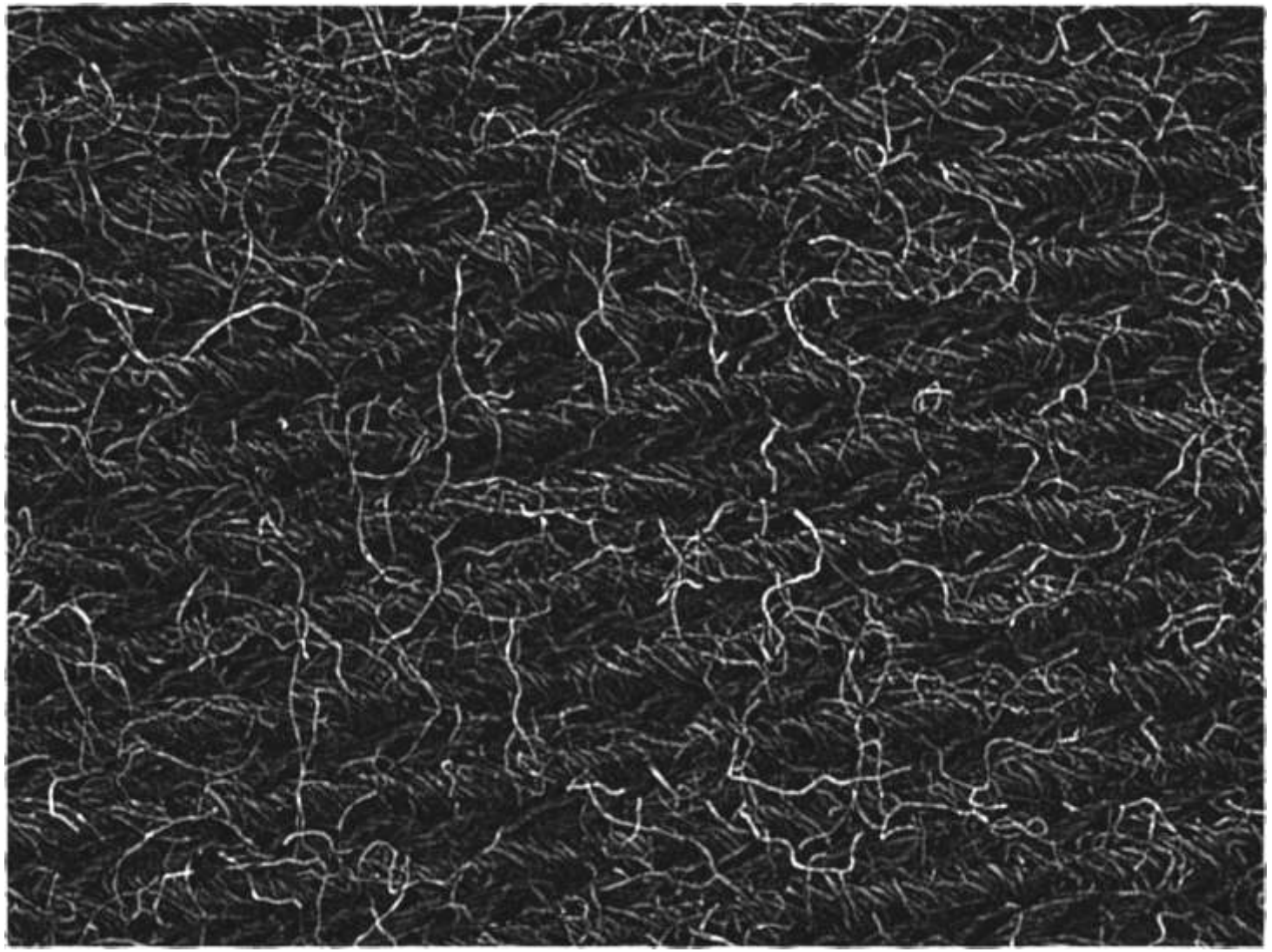
BABYBLUE (ENZYME)



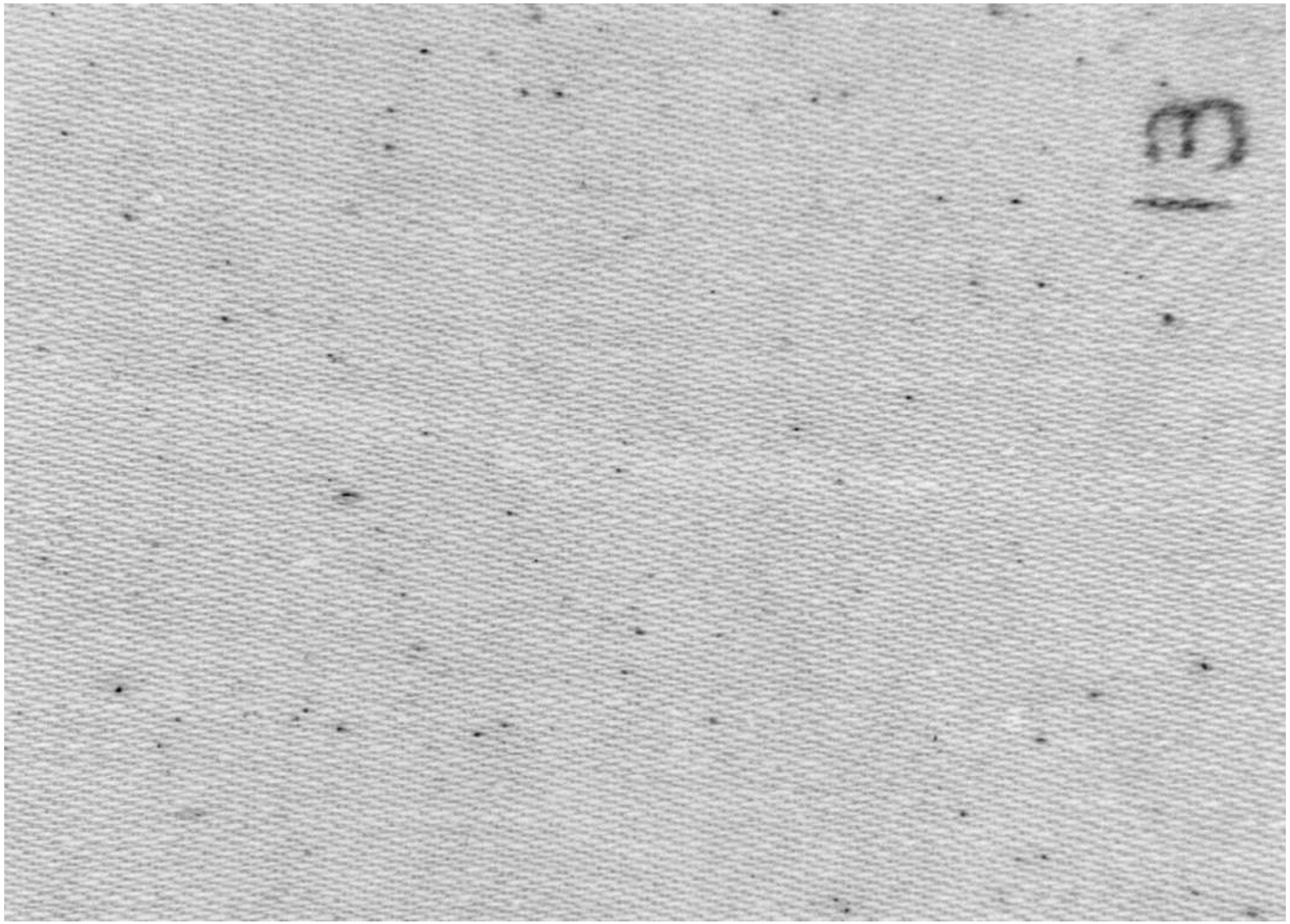
FUZZ ENHANCED (NO ENZYME)



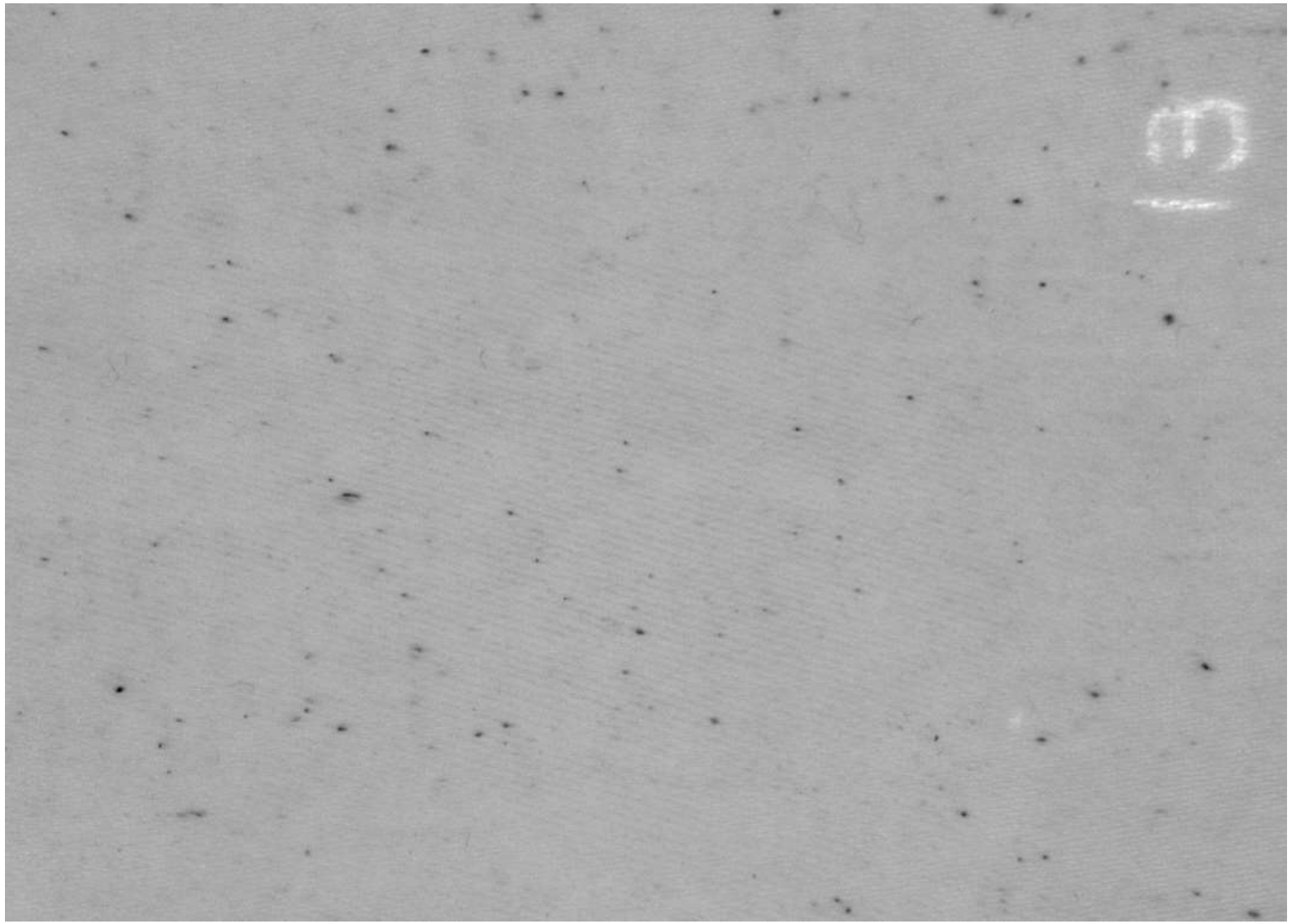
FUZZ ENHANCED (ENZYME)



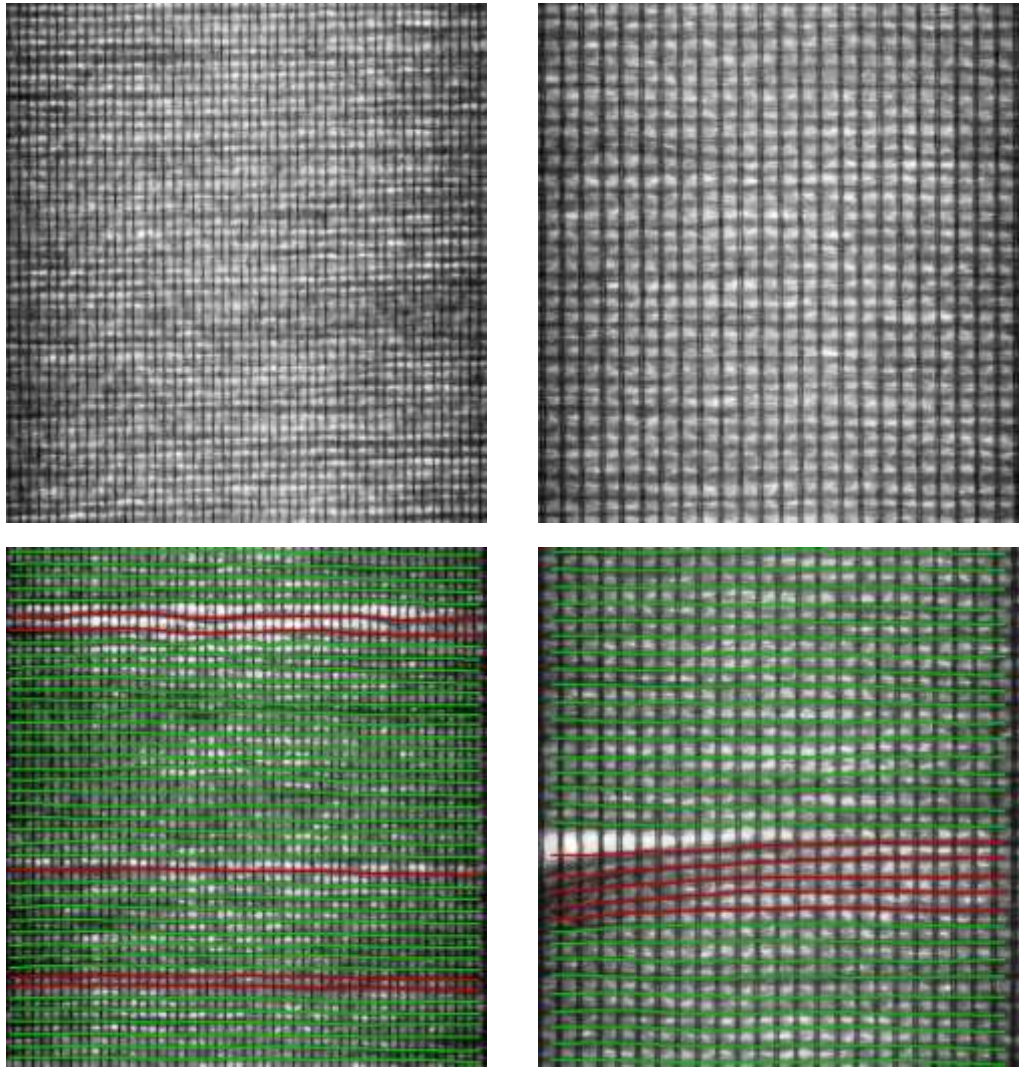
SEED COAT FRAGMENTS 435 NM



SEED COAT FRAGMENTS MAF2



WEAVE ANALYSIS



We measure what you see – and beyond

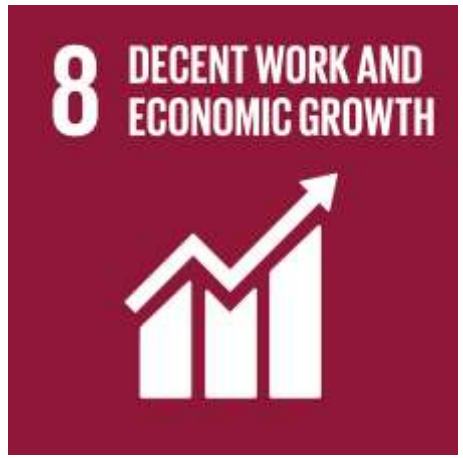
OUR VALUES



Zero Hunger and
Food Security



Good Health and
Well-Being



Decent Work and
Economic Growth



Responsible Consumption
and Production



Life Below Water



Partnership for
the Goals

THANK YOU!

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