



Multi-spectral analysis and the next generation of photo-scanning: a non-destructive method of reading the unreadable

Dr. Michael Lerche Nielsen, Institute for Name Research
Dr. Jens Michael Carstensen, Videometer A/S



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.

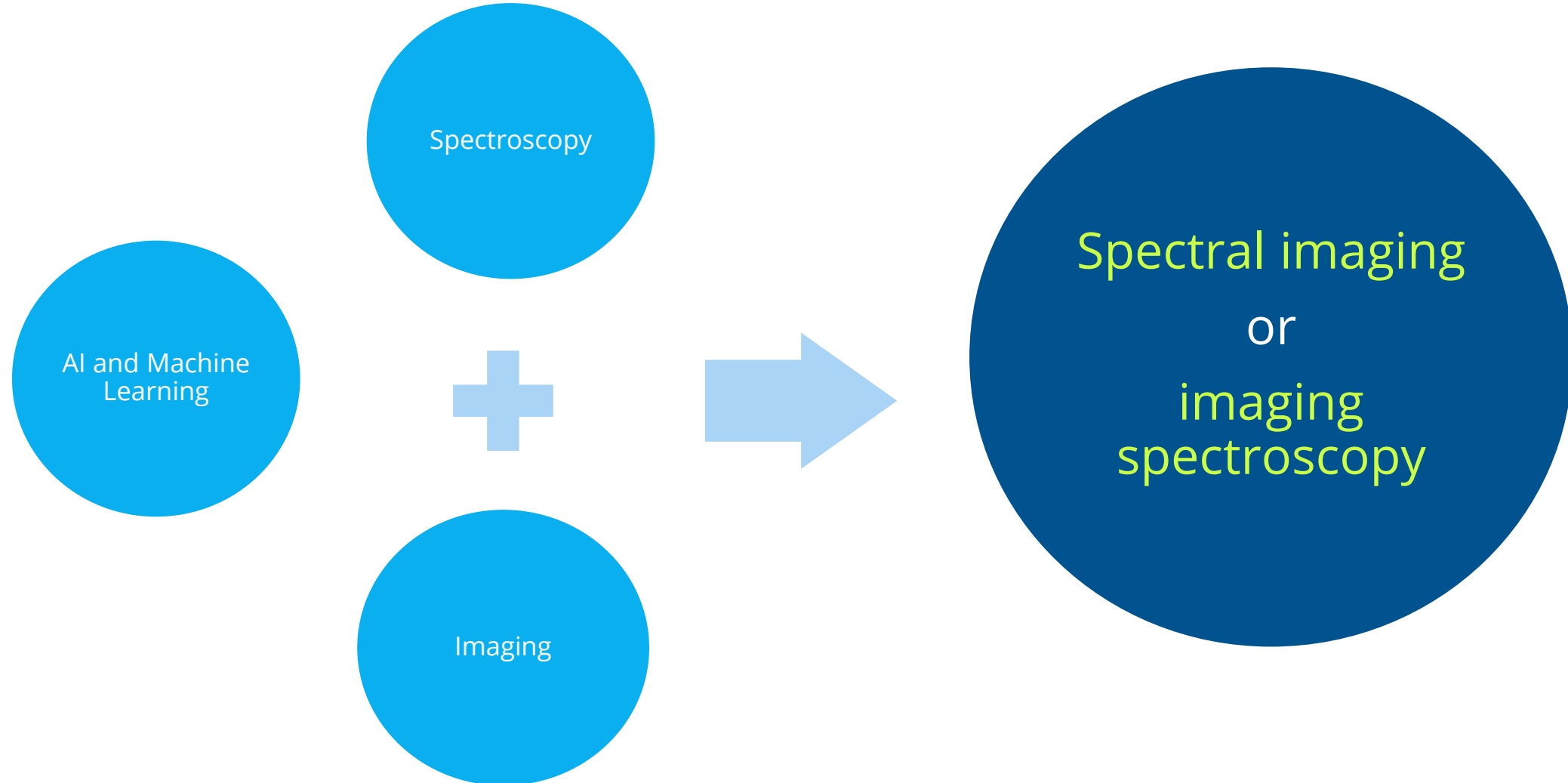
2020s

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

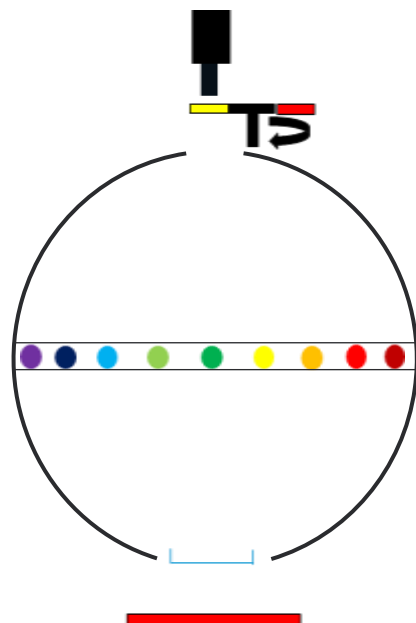
ENVIRONMENT

X

ILLUMINATION



LED BAND SEQUENTIAL SPECTRAL IMAGING



Camera and lens

Emission filter changer

Integrating sphere

LEDs of multiple wavelengths

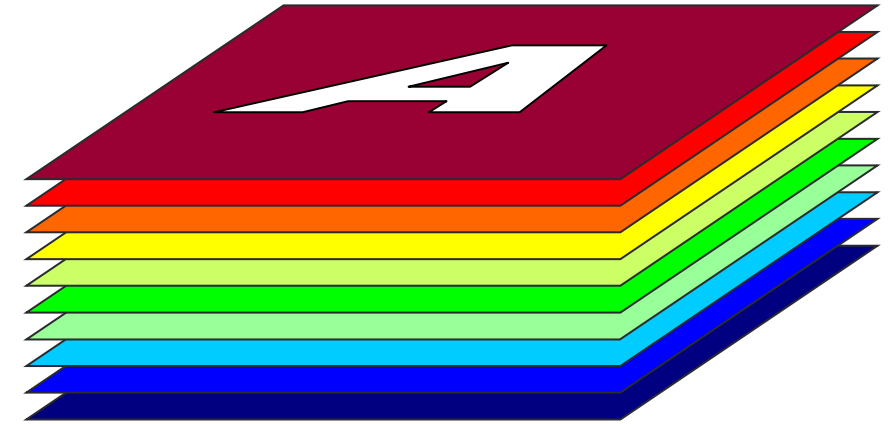
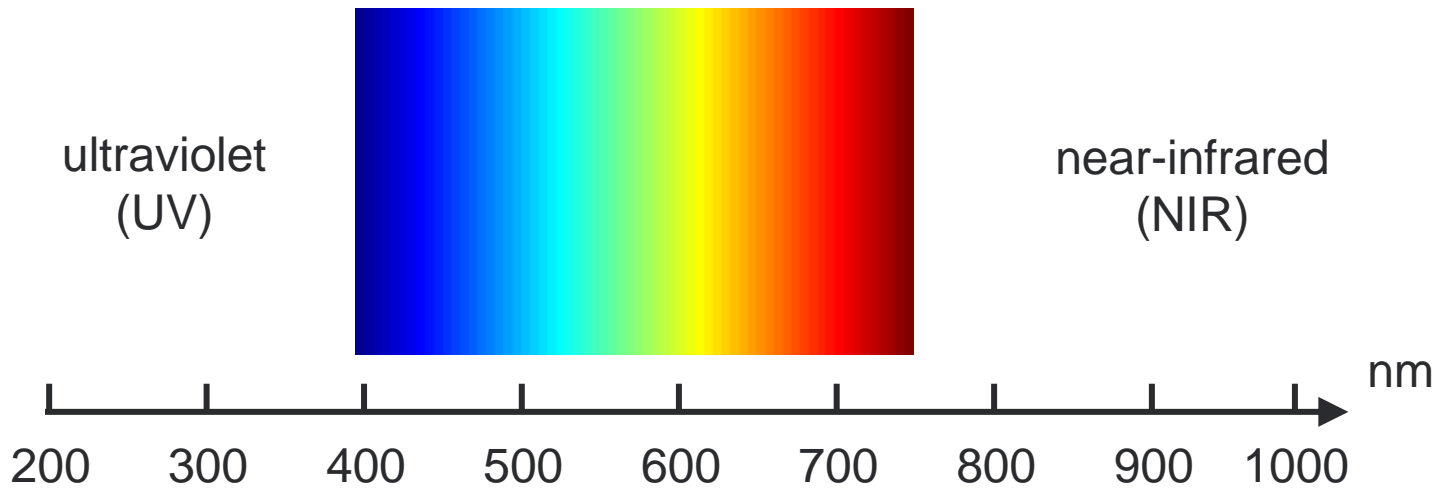
Sample is placed in target opening

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

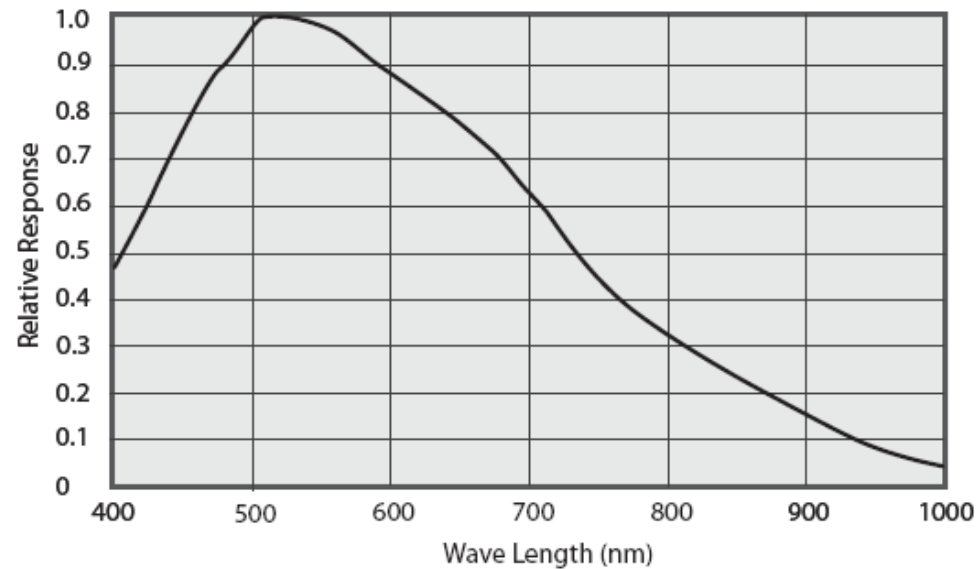
Pigment baseline,
moisture, fat, etc.

Spectral image is typically a large data
structure of 100 MB to 10 GB

MONOCHROME CCD SENSOR



Spectral Response BM-500 GE



Spectral response

We measure what you see – and beyond

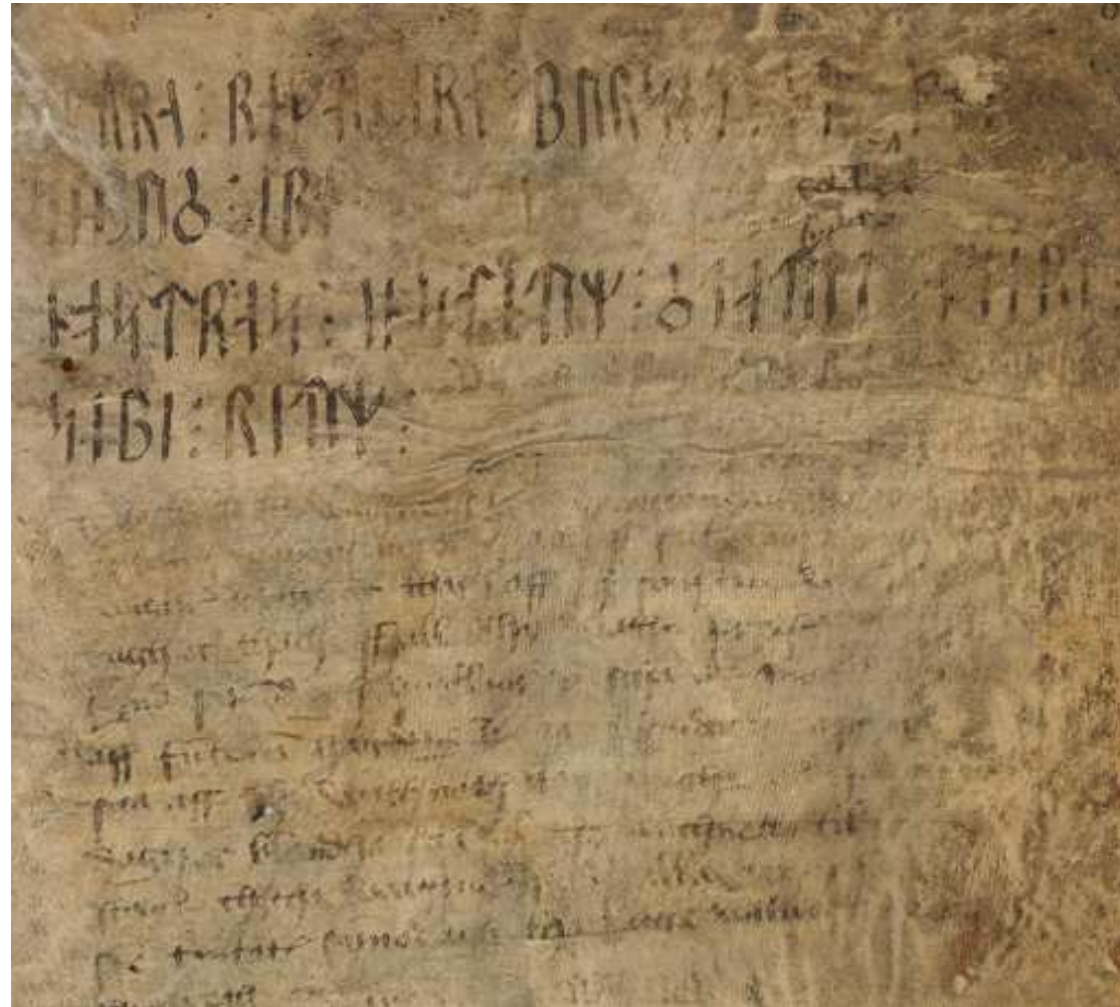




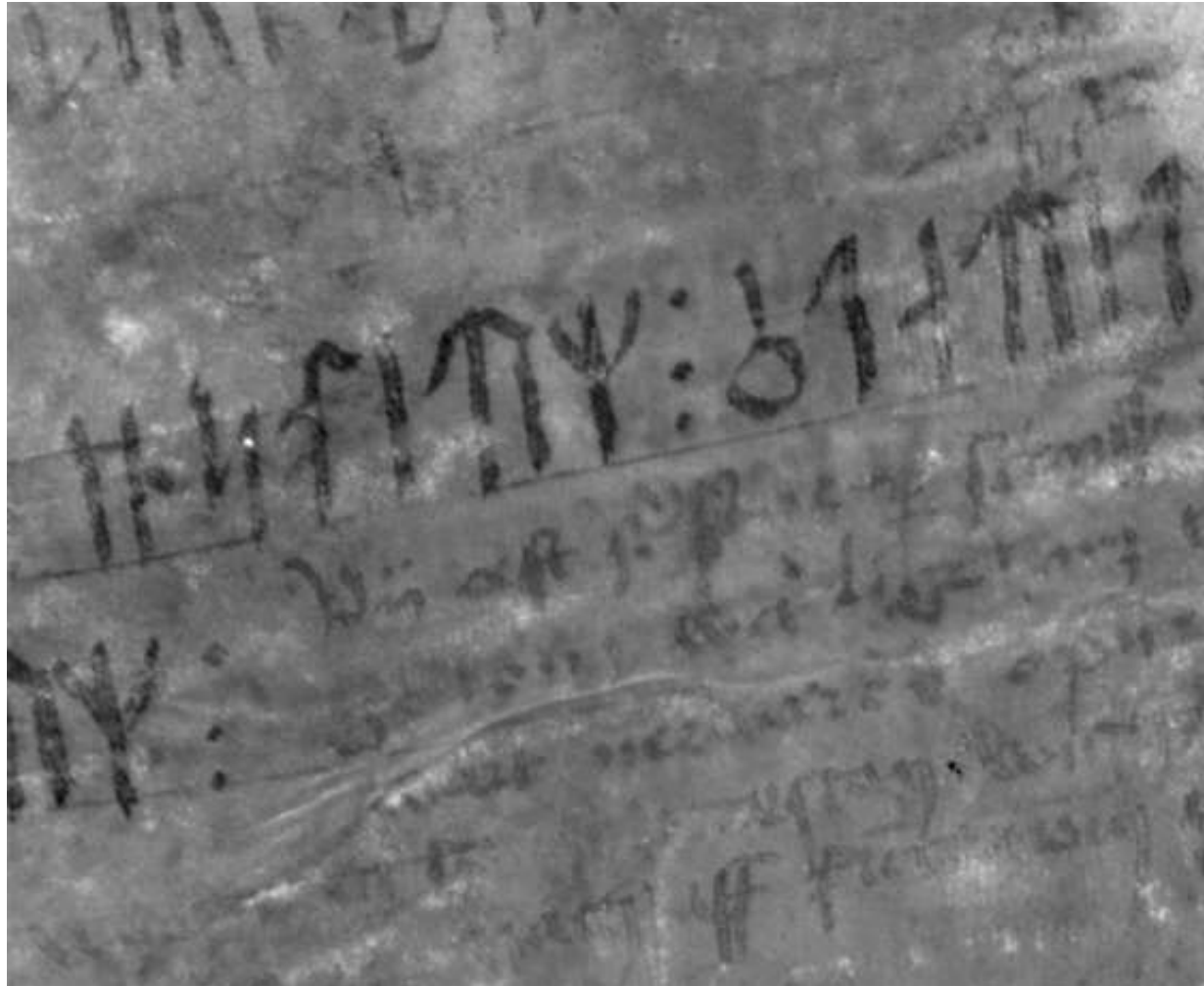
We measure what you see – and beyond



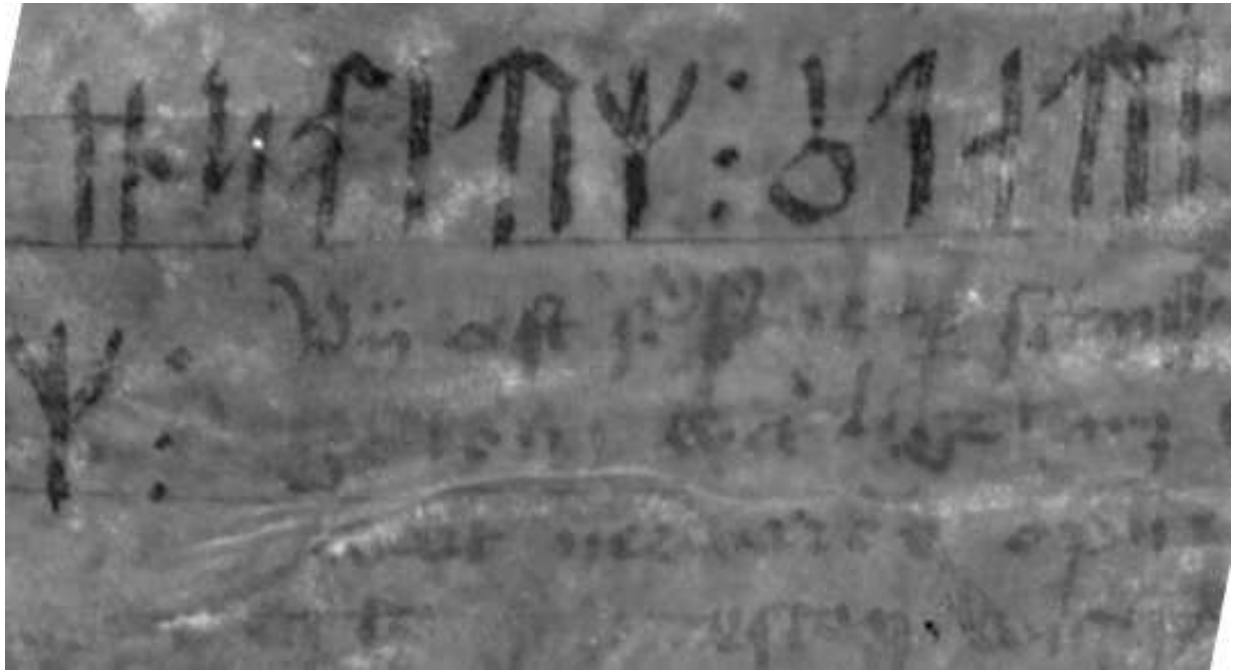
DIGITAL PHOTO AM 53 4TO. FOL. 8 R.



MSI AM 53 4T0. FOL. 8 R.



We measure what you see – and beyond

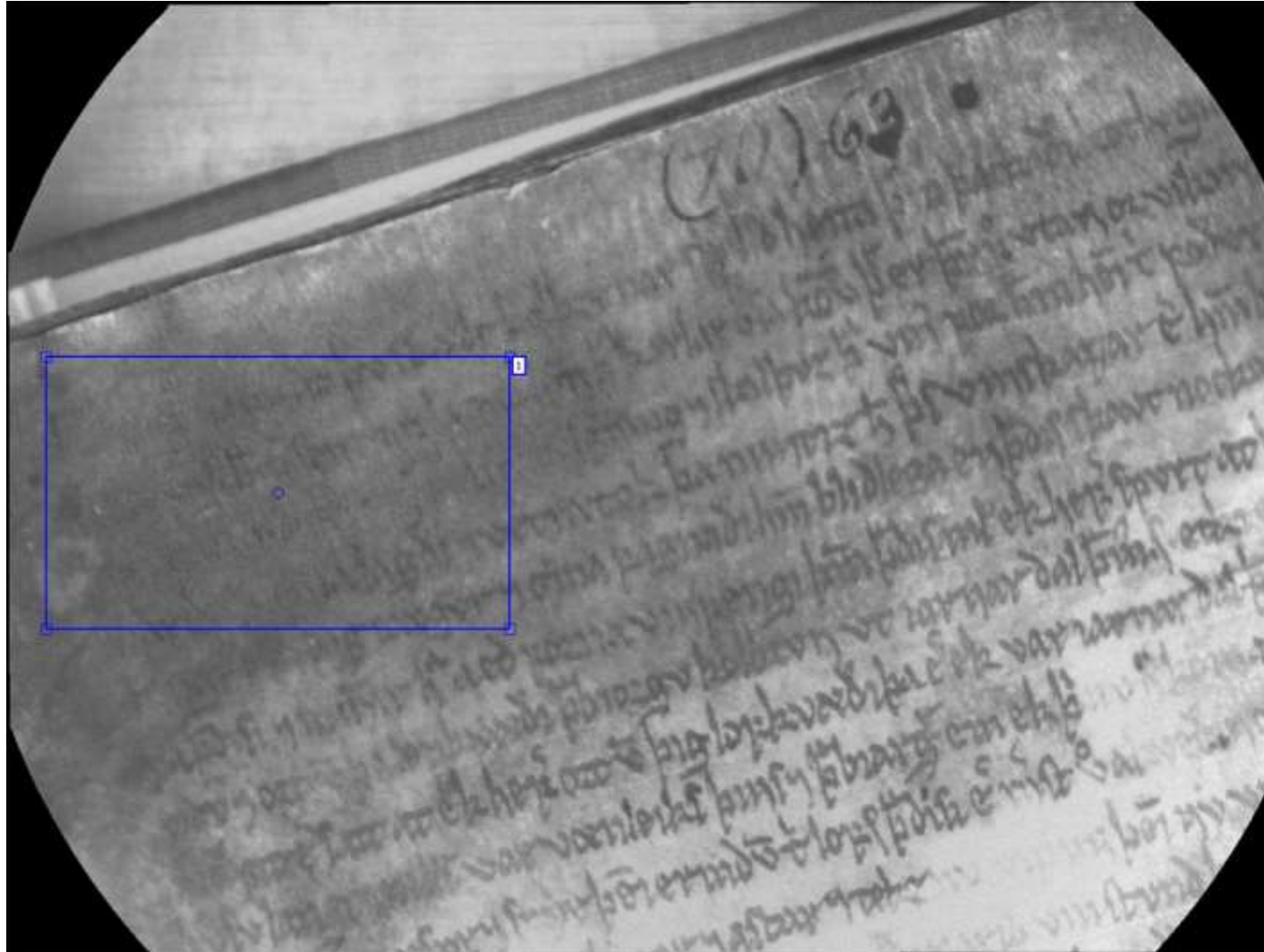


PARCHMENT AM 544 4TO, HAUKSBOK



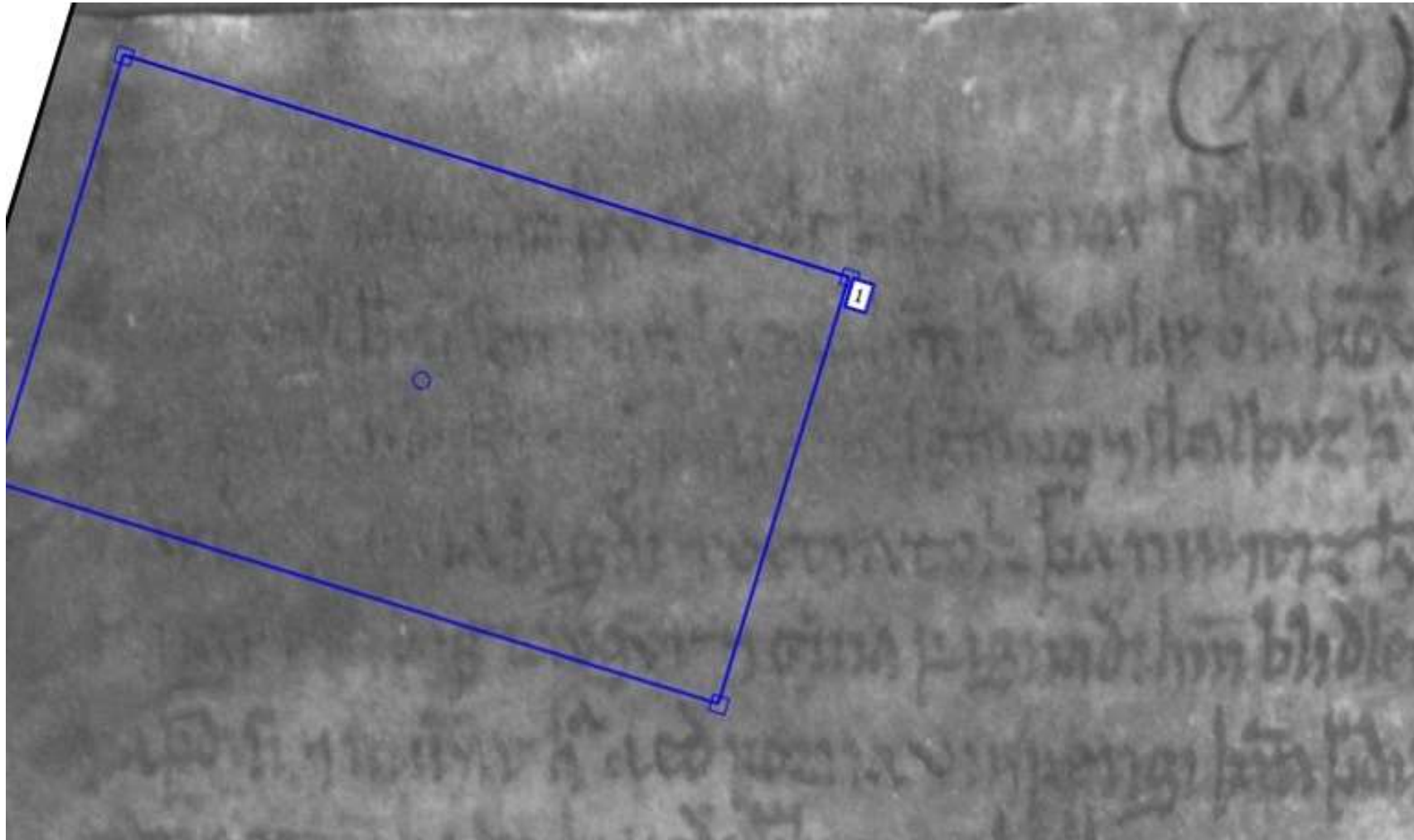
We measure what you see – and beyond

MSI OF HAUKSBOK



We measure what you see – and beyond

DETAILS OF THE MULISPECTRAL IMAGE



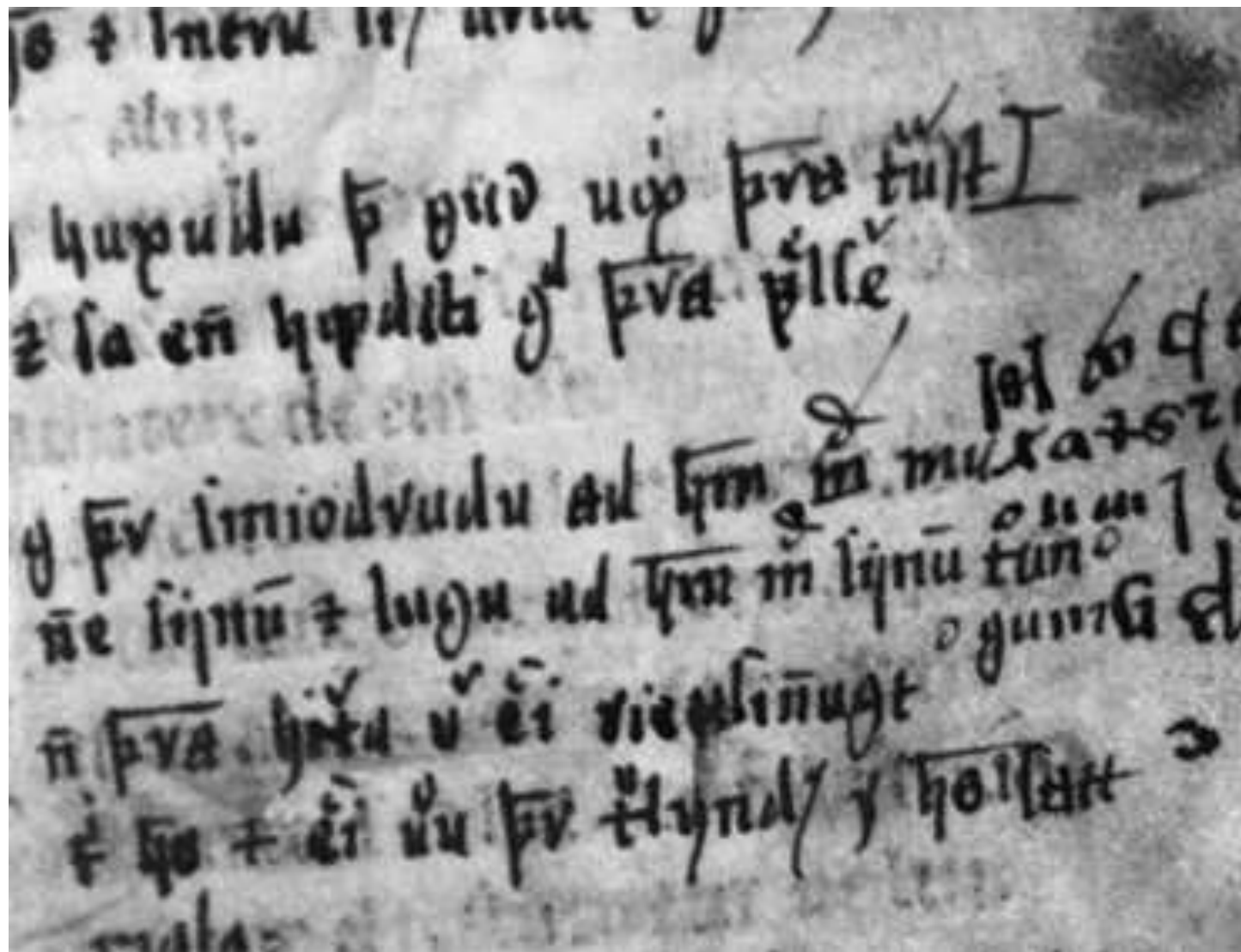
We measure what you see – and beyond

AM 618 4TO UNDER THE LAMP

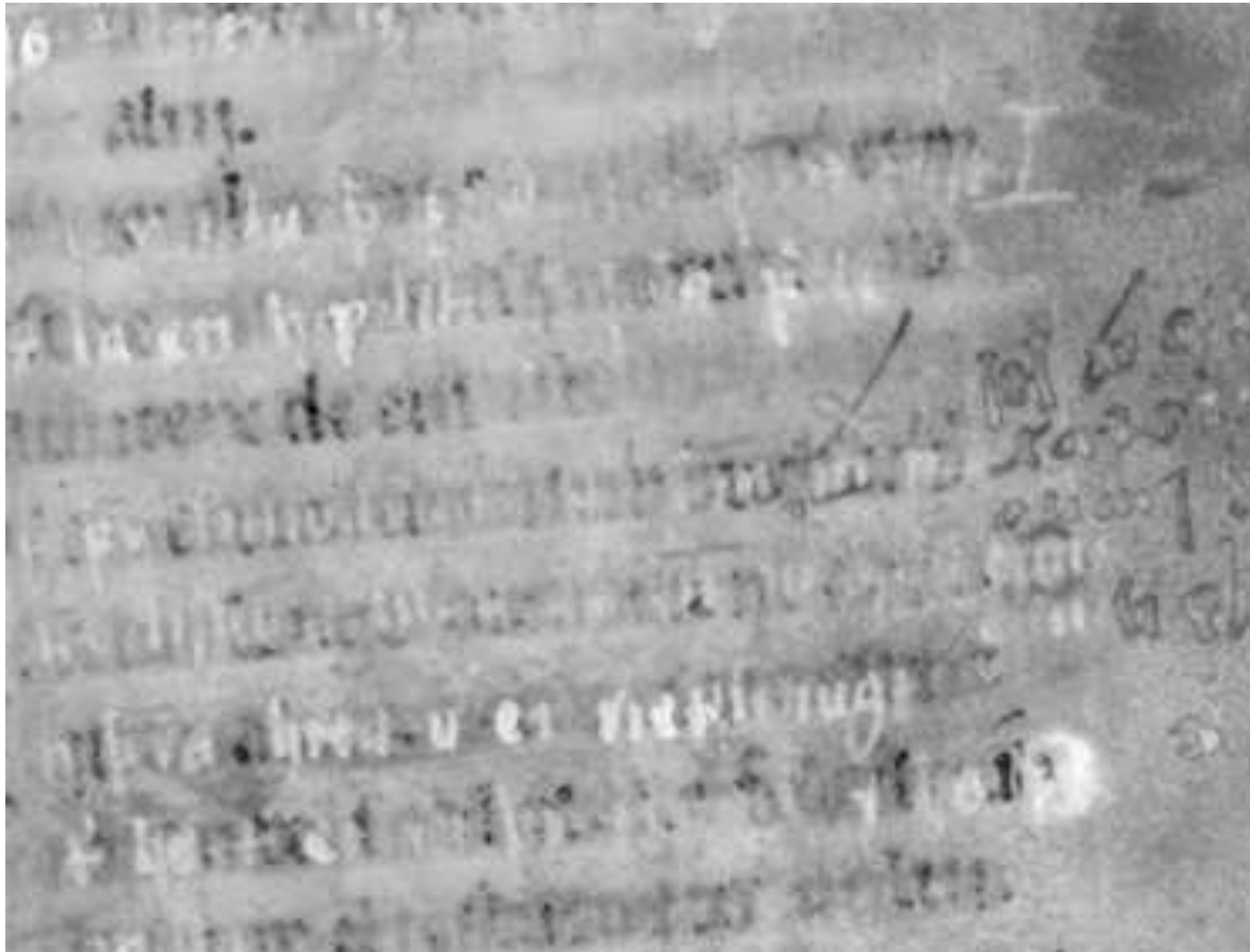


We measure what you see – and beyond

PALIMPSEST AM 618 4TO, TEXT 1586



AM 618 4TO, REMOVAL OF THE INK FROM 1586 WITH MSI



We measure what you see – and beyond

SUZANNE REITZ INSPECTS THE CHARTER



We measure what you see – and beyond

CHARTER, DIPL.DAN. LVX NO. 14



We measure what you see – and beyond

Nyt lys på middelalderens skjulte ord



SALMER David Salmer på latin. Den originale tekst på latin er skrevet i 1100-tallet med en oversættelse til oldfransk ved siden af. I 1500-tallet er en oversættelse til islandsk blevet skrevet oven på den franske tekst i højre spalte. Den franske tekst anes svagt neden under overskrivningen. Foto: Finn Frandsen

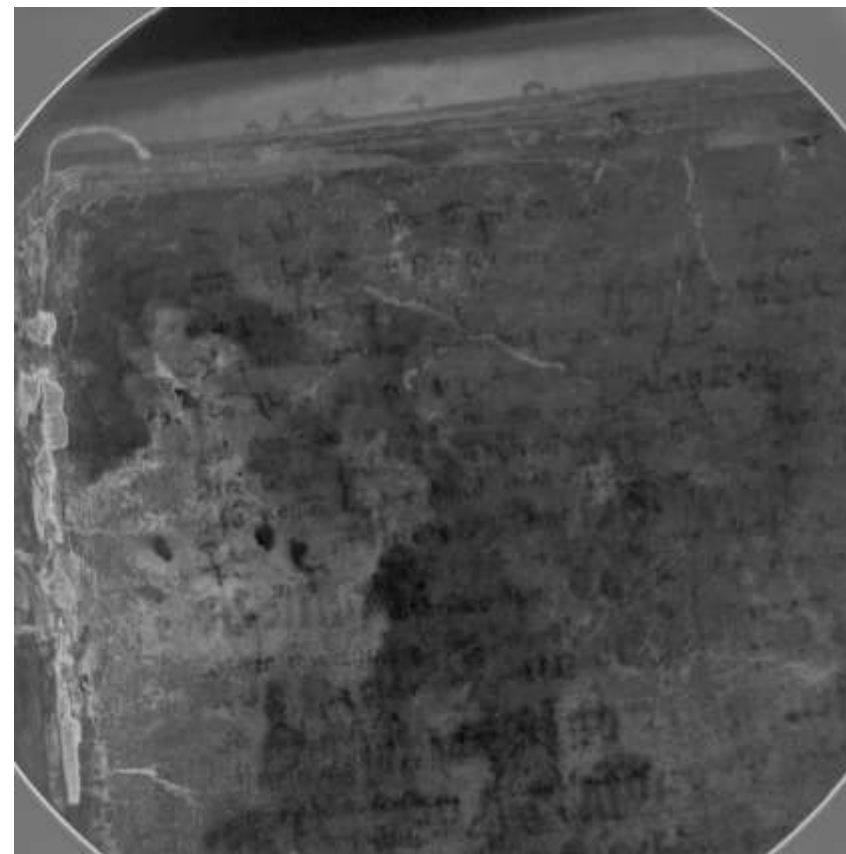


THE ELDER WESTROGOTHIC LAW

National Library of Sweden



Page 1 front, RGB



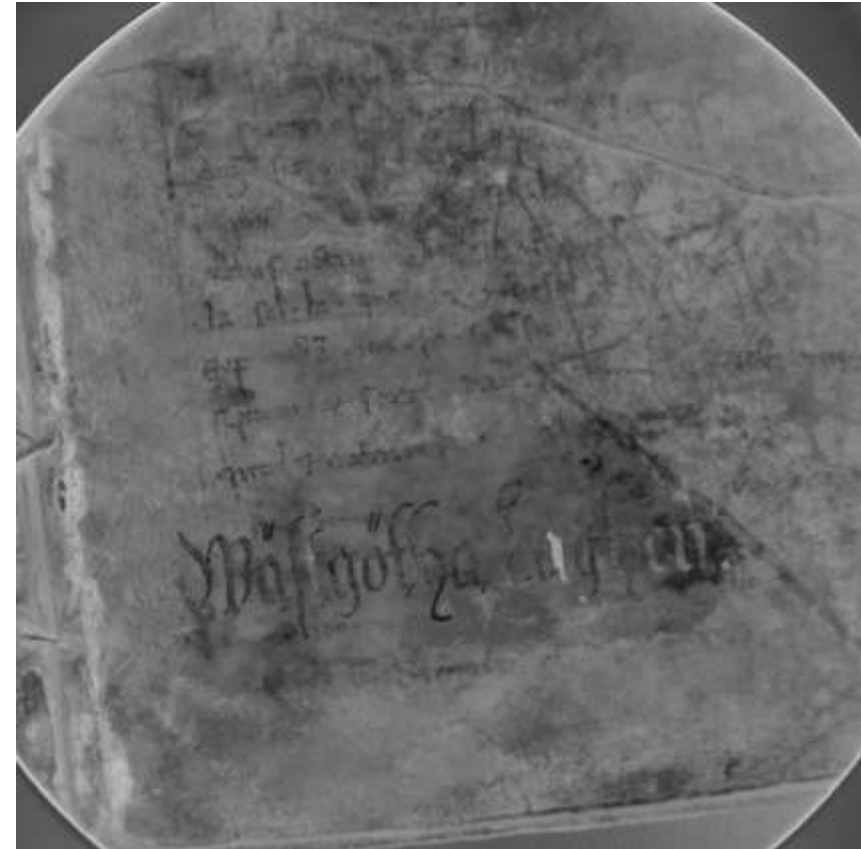
Page 1 front, spectrally enhanced

THE ELDER WESTROGOTHIC LAW

National Library of Sweden

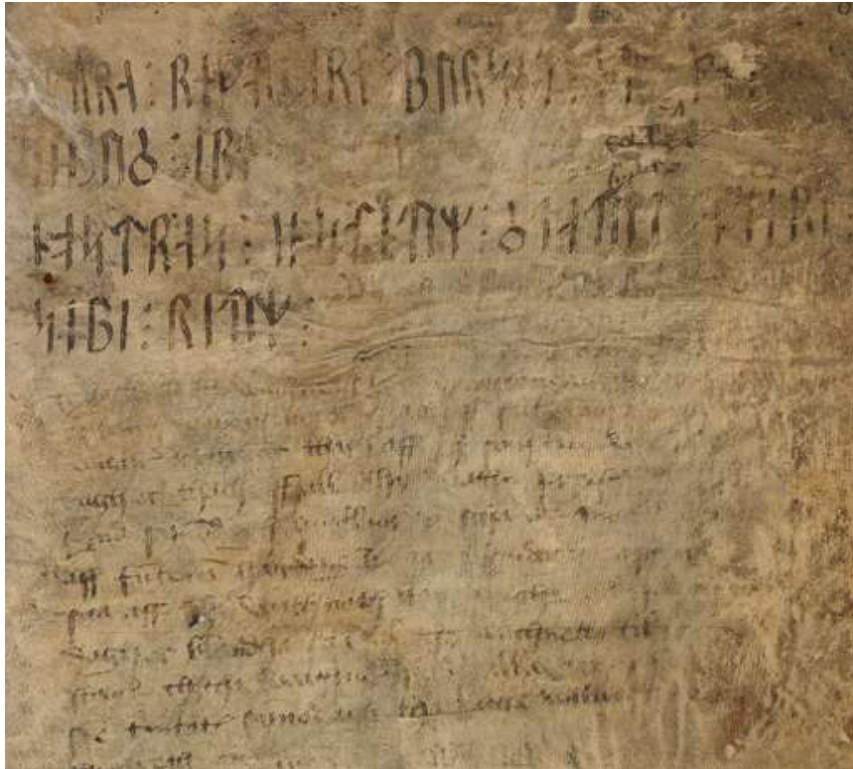


Page 1 front, RGB



Page 1 front, spectrally enhanced

TESTIMONIAL



During the work with [the Elder Westrogothic Law \(Äldre Västgötalagen\)](#) we used VideometerLab to make spectral imaging and analysis of four partially or largely unreadable pages. During this process we obtained valuable new information and VideometerLab proved to be a highly useful and efficient tool. Thanks to the Videometer images, we now know a lot more about the author, than we knew before.

Per-Axel Wiktorsson
Professor emeritus in Swedish language, Örebro University

STICHING ONE SPECTRAL COMPONENT

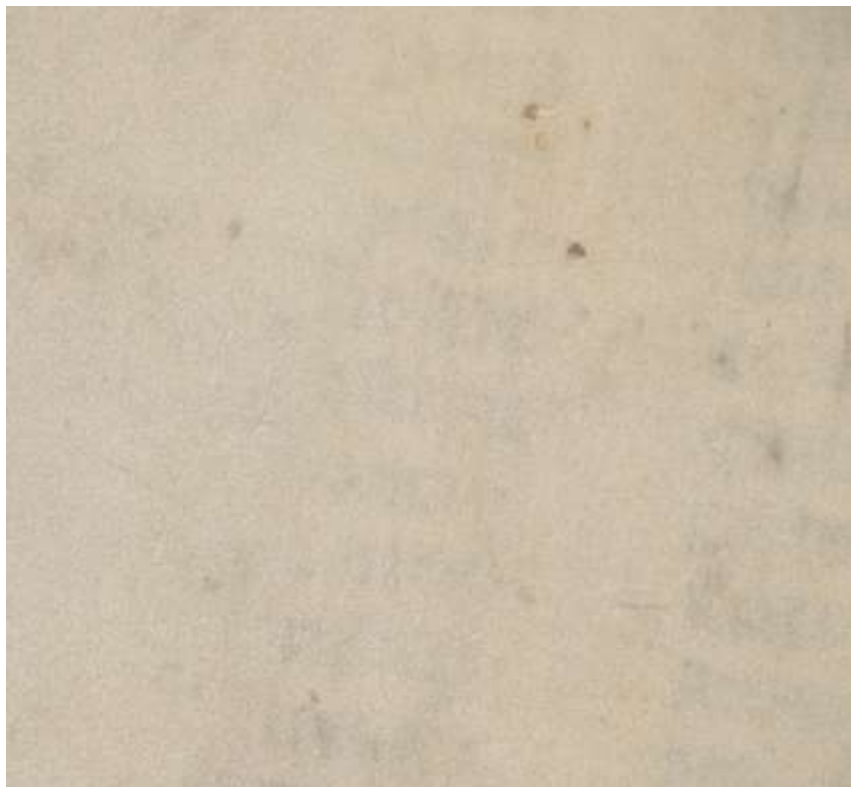


We measure what you see – and beyond

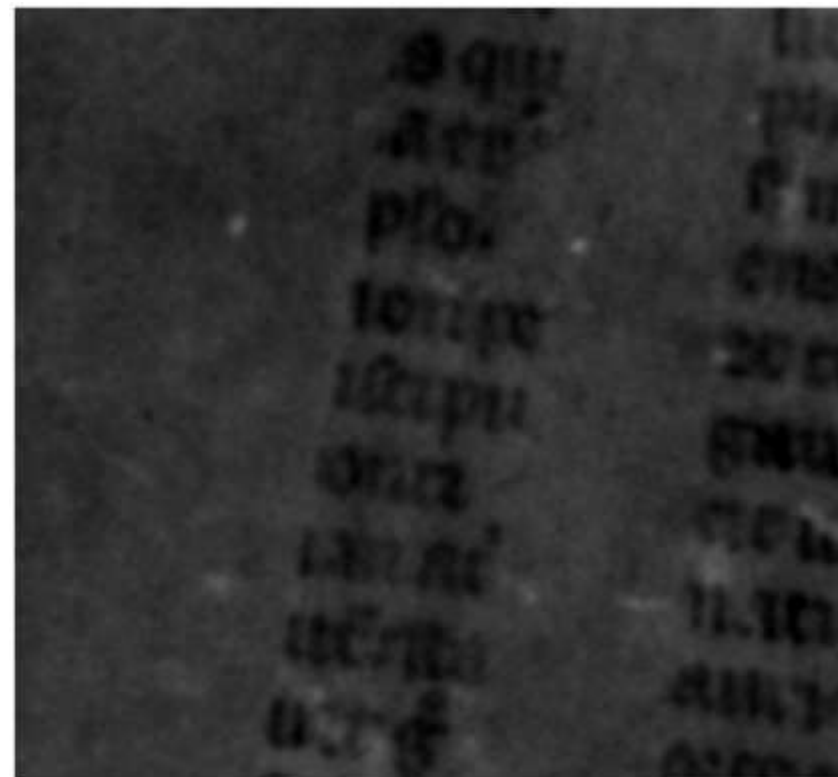
REVERSE SIDE OF BOOK COVER



Manuscript from BNF, France



sRGB



Spectral enhancement

We measure what you see – and beyond

MAPS FROM THE DANMARK EXPEDITION 1906-1908



VideometerLab used to reveal the destiny of sledge team 1.

Berlingske tidende, Jan. 13, 1913

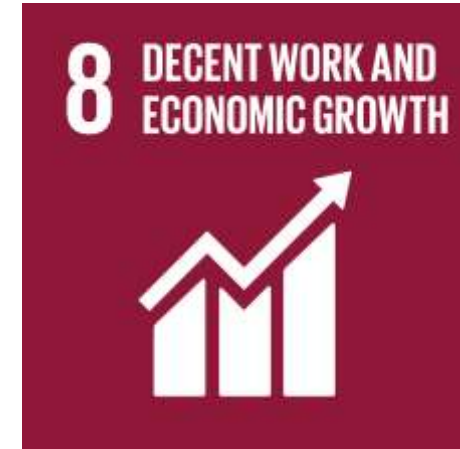
OUR VALUES



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!



Address

Hørkær 12B
DK-2730
Herlev



Email

mail@videometer.com
www.videometer.com



Phone

+45 4576 1077