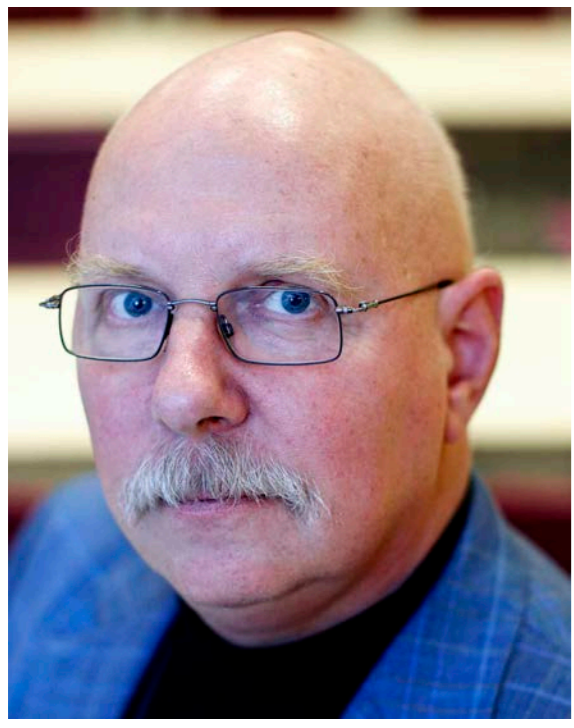


New light on the surface of art objects in the conservation studio with a 3D digital Hirox microscope mounted on an XYZ stand

Jaap J. Boon (1)



in collaboration with Emilien Leonardt (2) and Hideyuki Masui (3)

- 1: JAAP Enterprise for Art Scientific Studies, Amsterdam, NL (info@jaap-enterprise.com)
- 2: Hirox Europe, Limonest, France (emilien@hirox-europe.com)
- 3: Hirox-USA, Hackensack, New Jersey (masui@hirox-usa.com)

The *Microcosm of Works of Art* is a vista to be opened to conservators, art scientists, art historians and the public in museums. We have mounted a high resolution microscopy system (HIROX) on a specially designed X-Y-Z stand system (MOPAS) that enables direct microscopy of works of art both horizontally as well as vertically.

This poster shows various examination modes with the instrumental setup and lighting conditions in case studies.

The portable T-stand for horizontal and vertical work is light weight and fits in a suitcase suitable for air transport (weight under 23 kg). It is demonstrated at the Hirox USA stand 551 in the Exhibition Hall.


Acknowledgement: We thank Frans Hals Museum Haarlem (NL), Redivivus Conservation Studio The Hague (NL), Henie-Onstad Kunstsenter Oslo (N), the Jan van Eyck Research team of KIK-IRPA in Ghent (B) and Rijksmuseum Amsterdam (NL) for permission to use our own or their pictures.

Heavier constructions were developed as permanent setup in the conservation studio. In horizontal mode the art work and the microscope-stand system are one unit thus minimizing environmental vibrational noise. Special tables have been designed for mobility within a museum or conservation studio.

See also jaap-enterprise.com.

High resolution high magnification viewing with the HIROX on MOPAS supports recording as calibrated still images, tiled images or videos. Videos while micro-moving the microscope over the surface, are particularly useful for examination of painting surfaces in poor condition by conservators

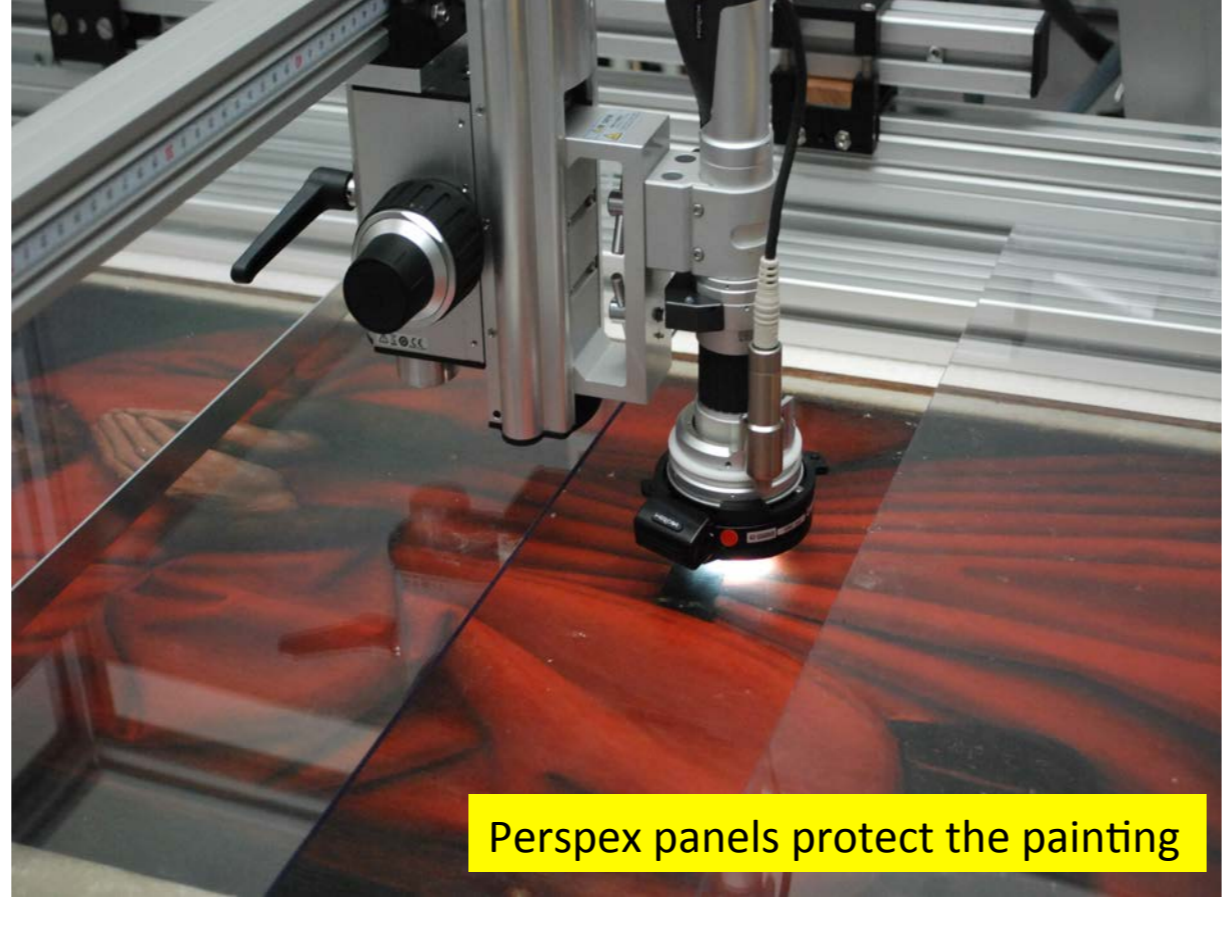
Imaging with the HIROX Z-direction submicron stepper makes it possible to obtain 3D in-focus images and digital 3D image data sets that can be processed for 2D- and 3D-profile measurements and depth profiling. See also www.hirox.com



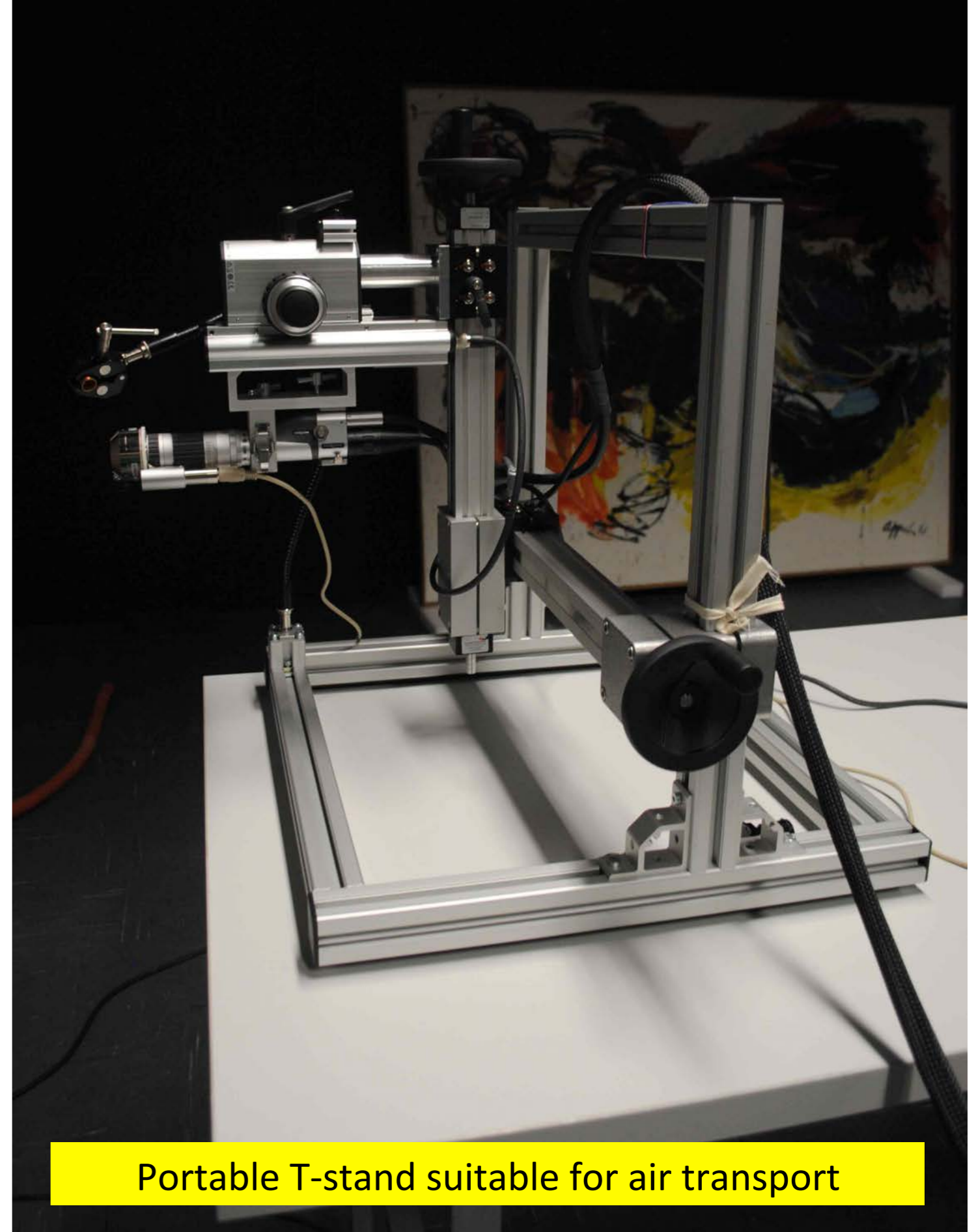
Hirox KH 8700
Microscopy system:

- High magnification
- High resolution
- 3D in focus images
- Video imaging
- Imaging moving parts
- Rotating side view
- Revolving trio lens

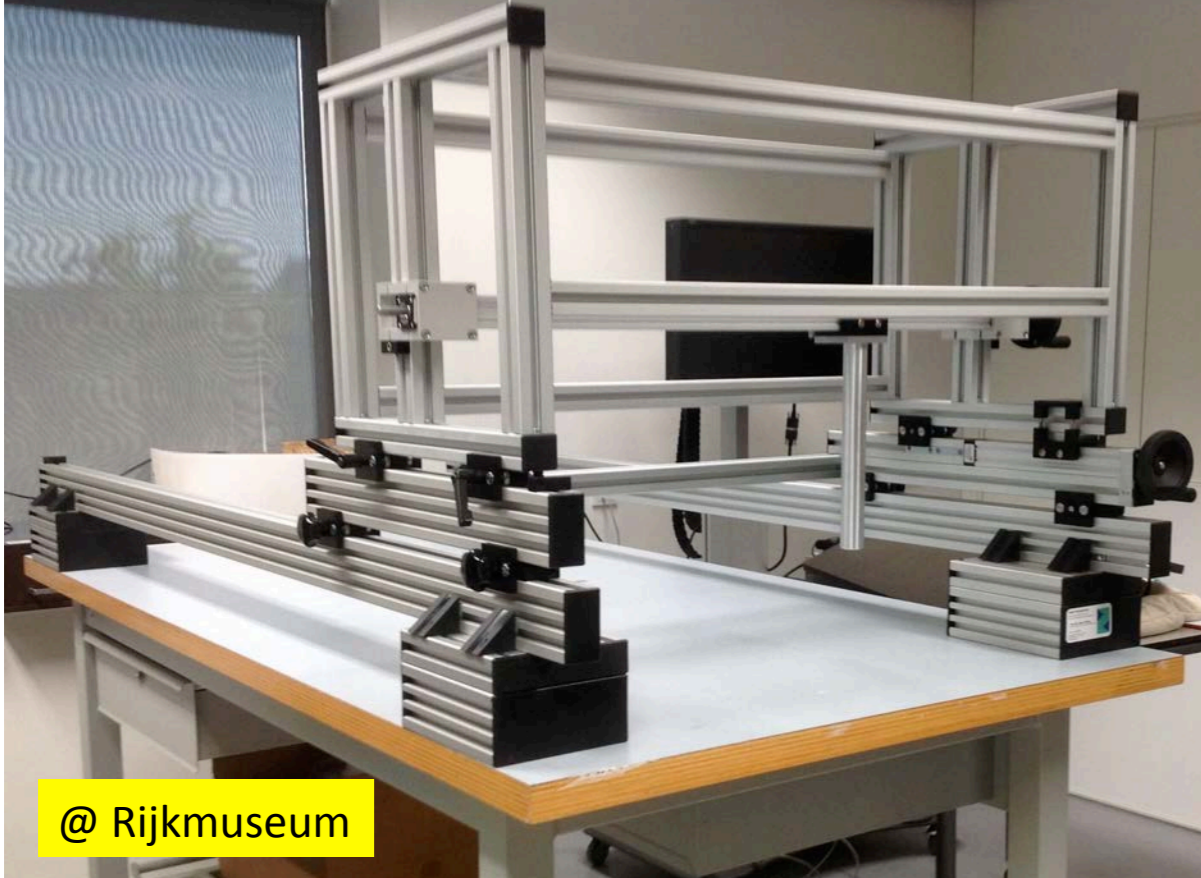
Highly suitable for microscopic imaging of works of Art



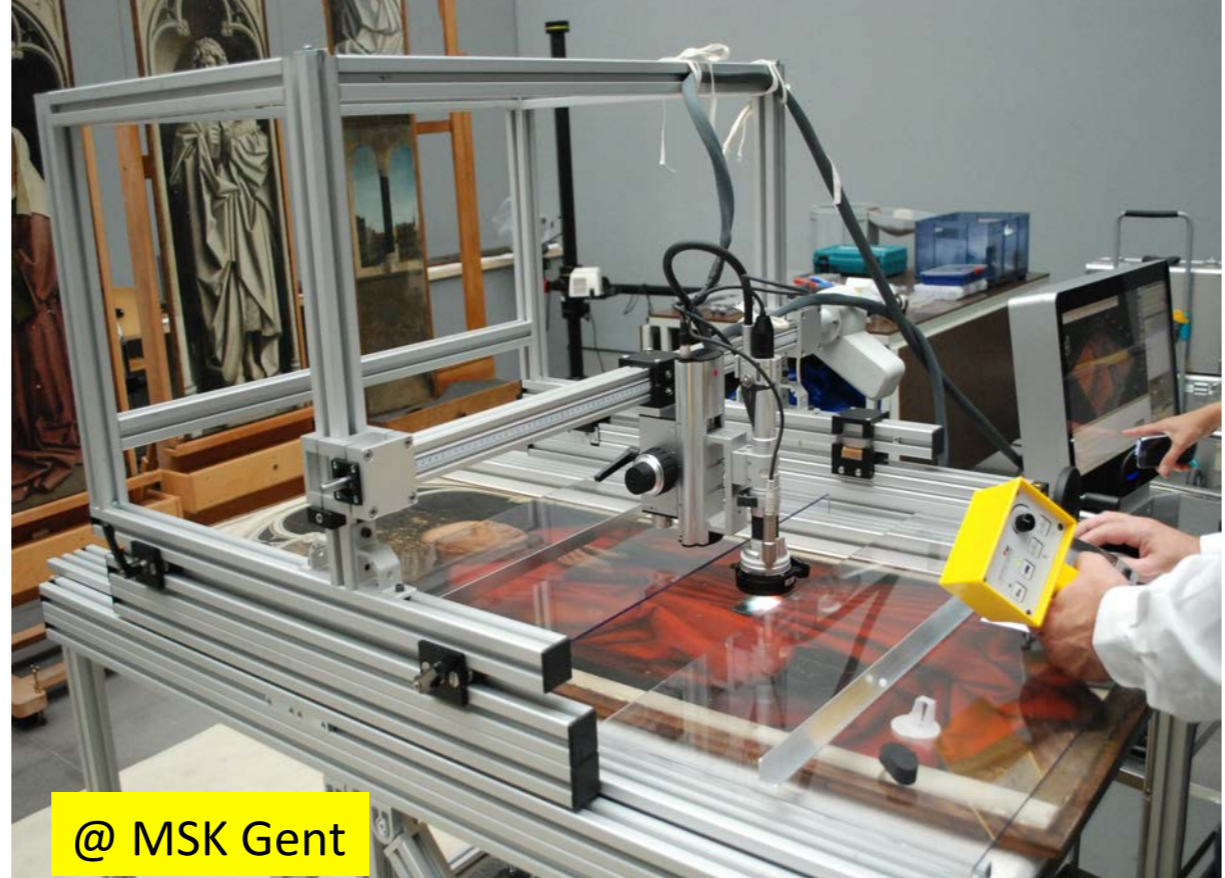
Perspex panels protect the painting



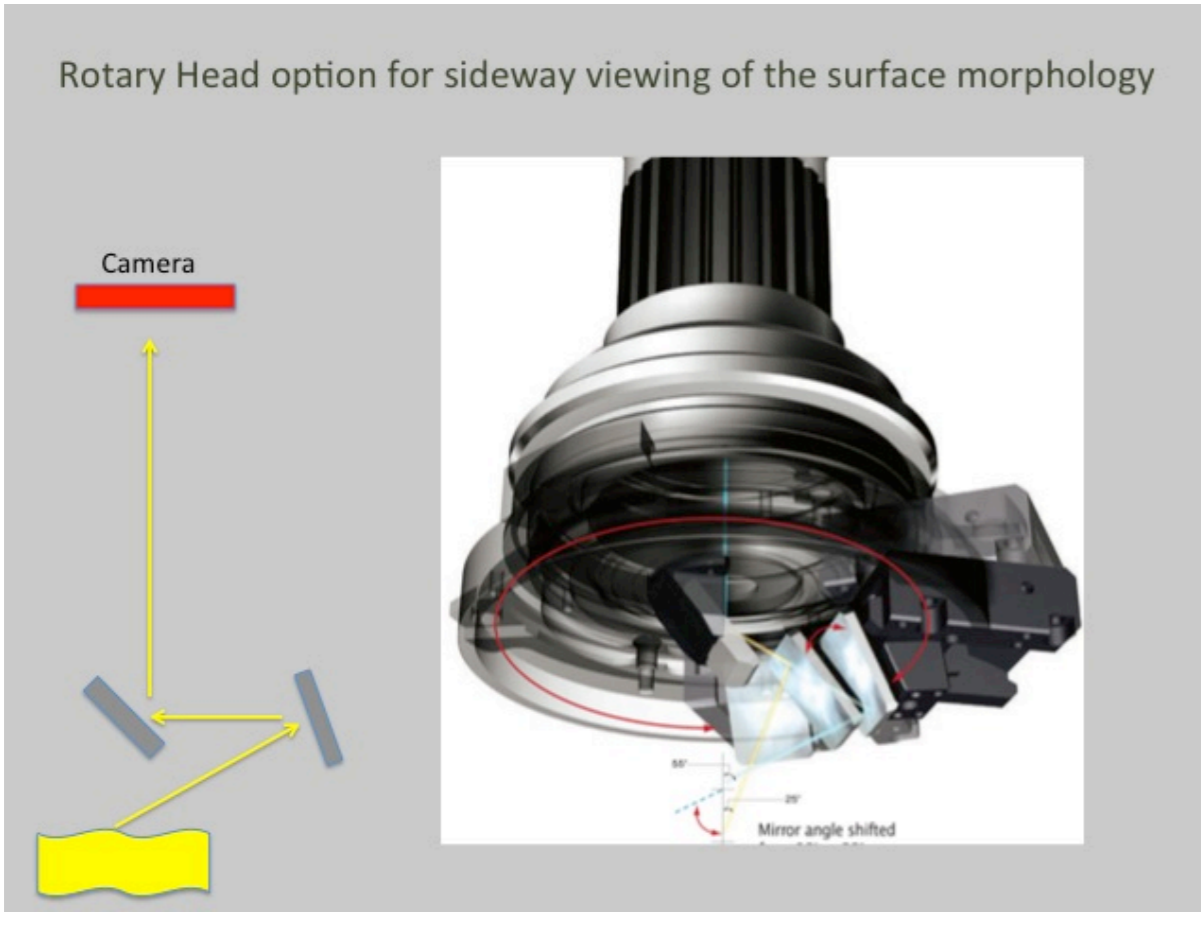
Portable T-stand suitable for air transport



@ Rijksmuseum




@ MSK Gent




Rotary Head option for sideways viewing of the surface morphology

Camera


Mirror angle shifted



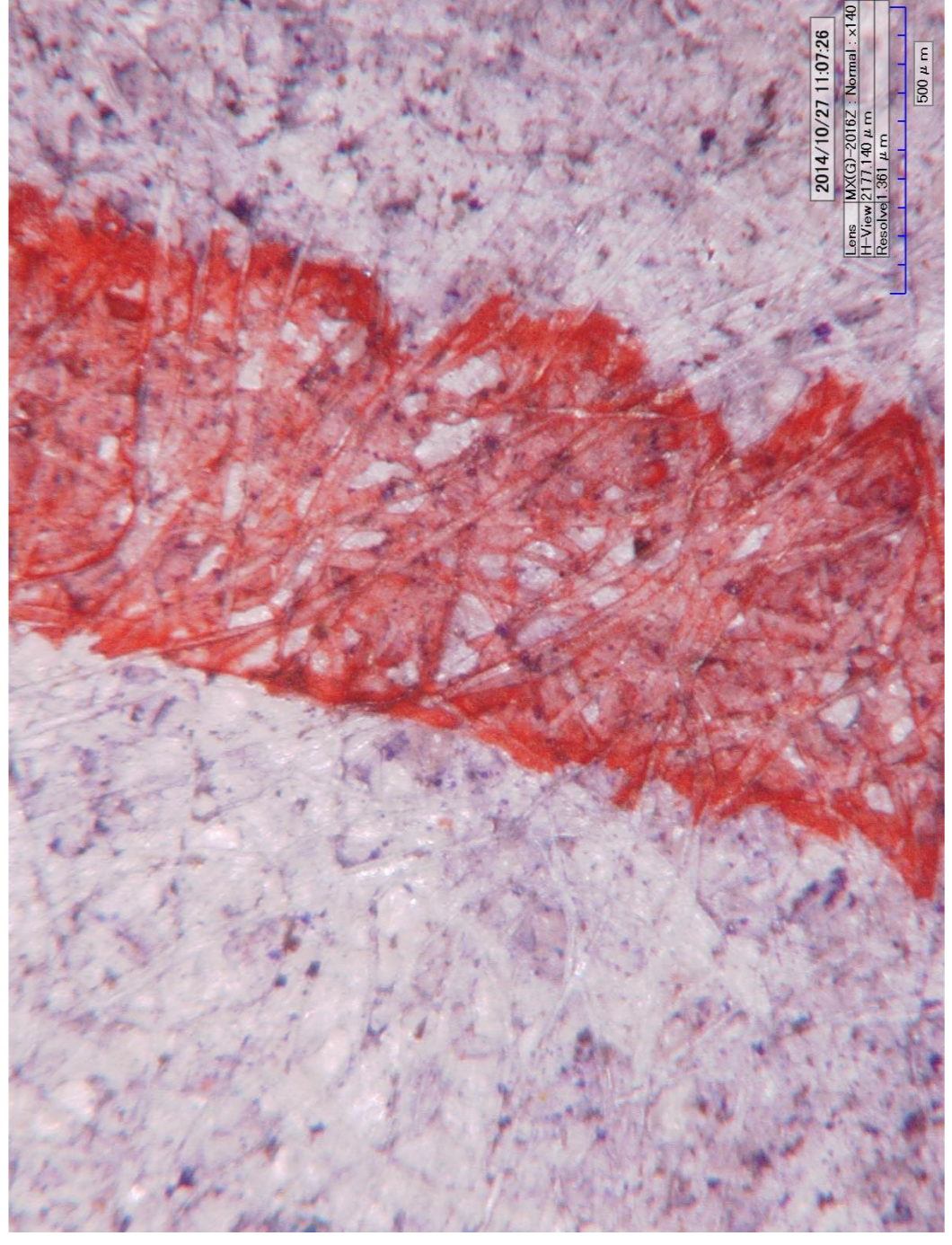
Jean Paul Riopelle's
impasto brushwork




Mobile T-stand used at TEFAF 2015



Examination of stone sculpture at KIK-IRPA



Study of signature ink on Chinese paper



New development:
Attachment for UV-fluorescence view

VIS

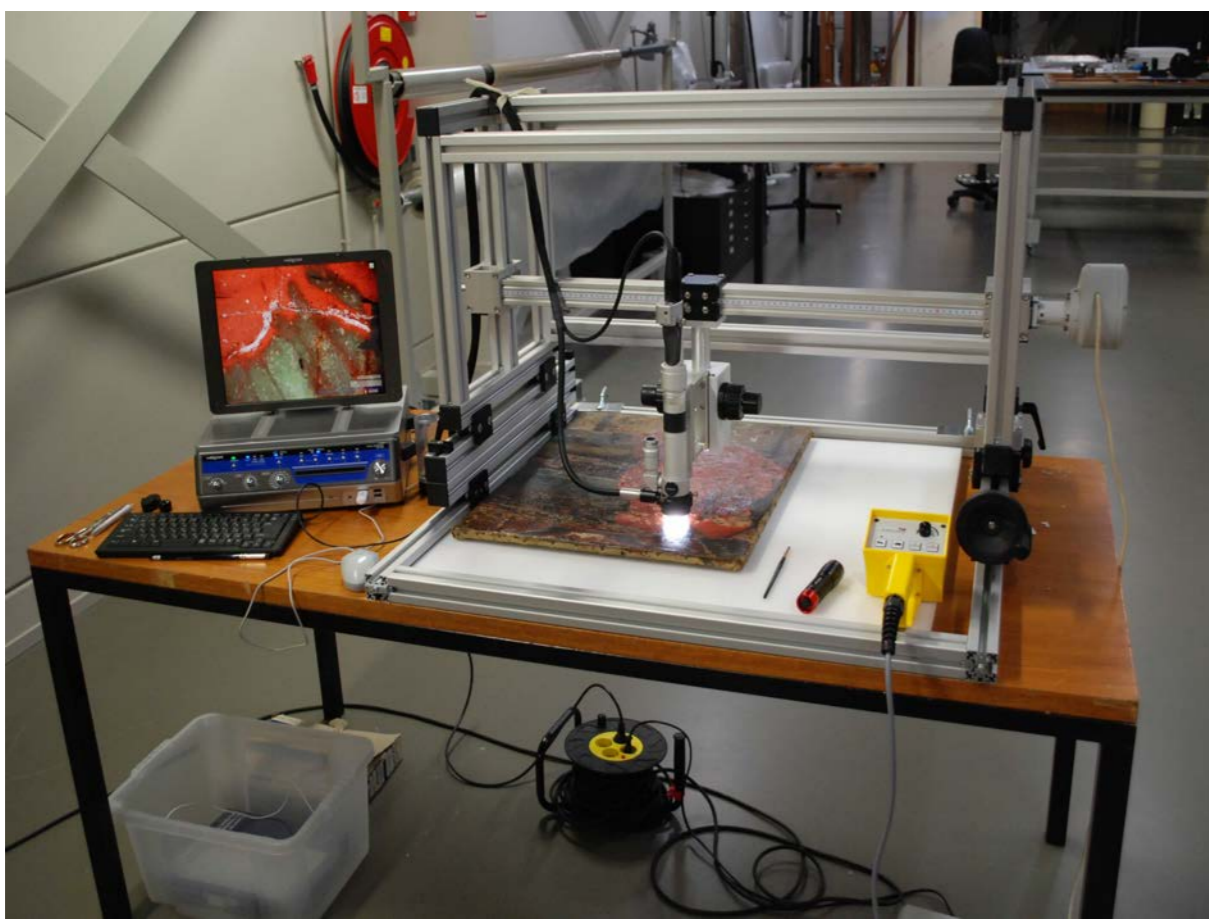
UV
shows glue

Lighting conditions are vitally important in painting studies

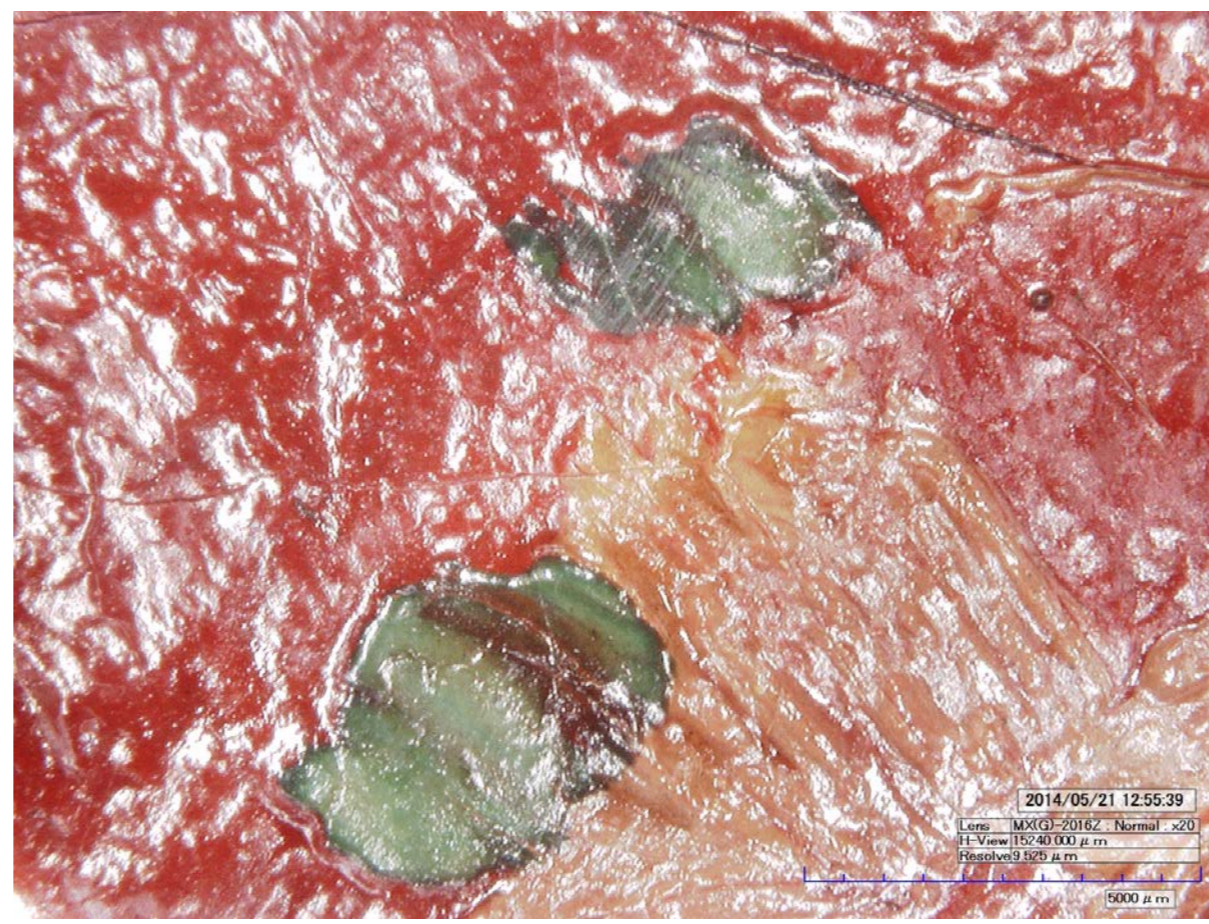
Investigation of *Woman with Kimono* by Breitner at Redivivus Studio (The Hague)

- ◆ Bright field: specular reflection but good information on varnish surface condition.
- ◆ Dark field: more diffusing light condition images the paints

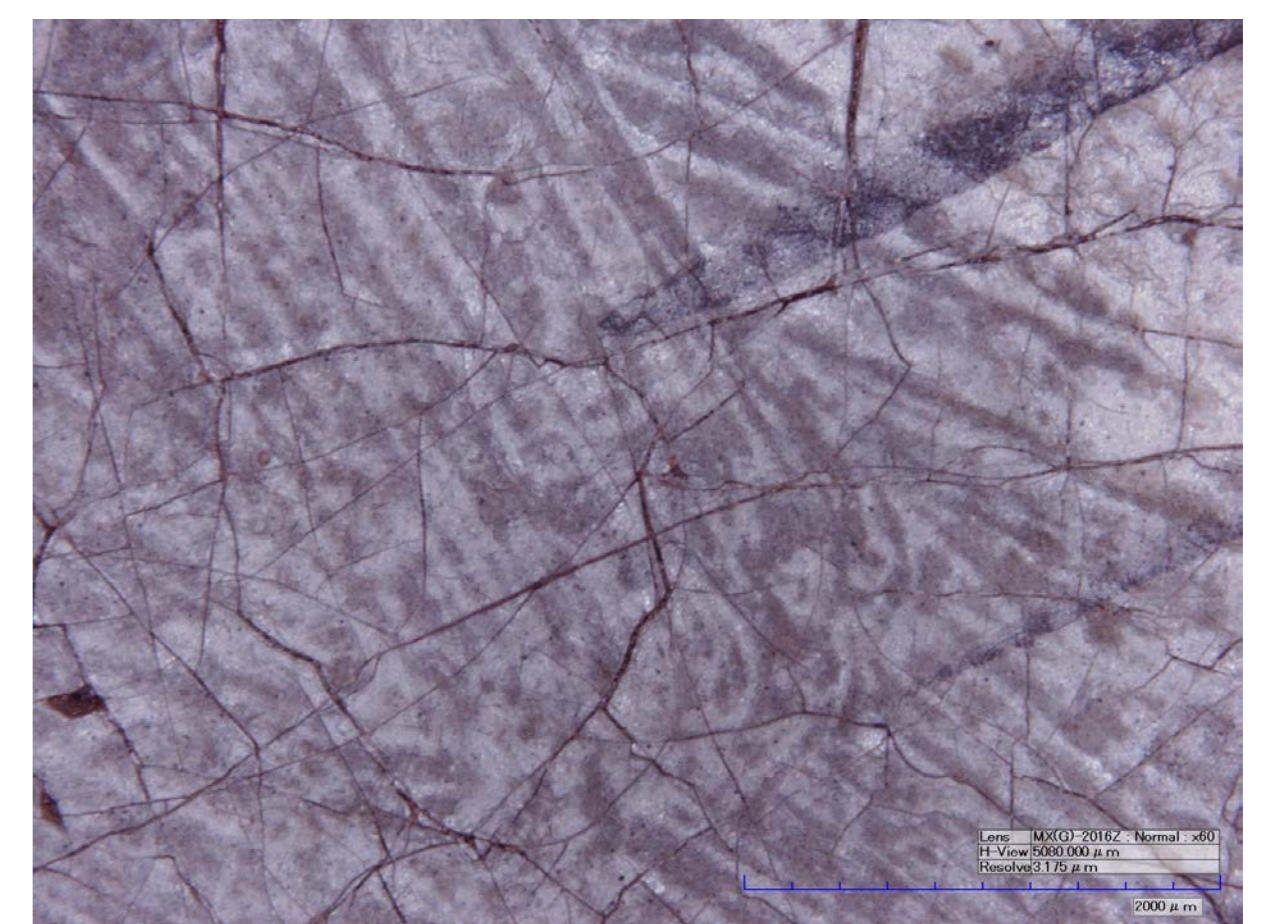
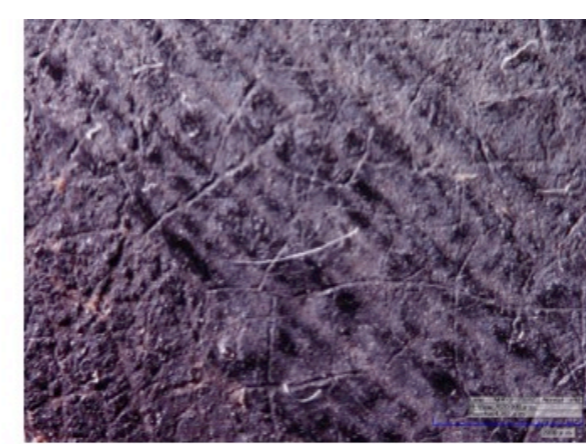
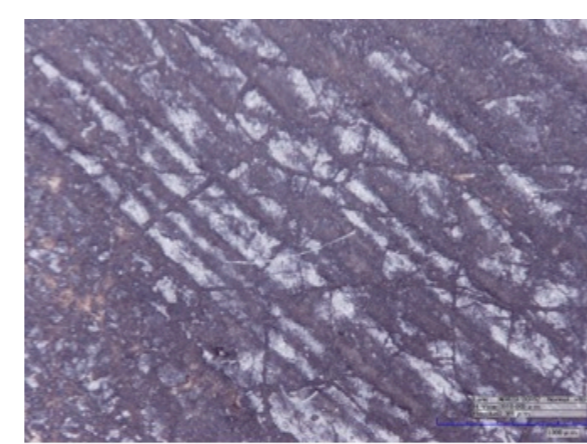
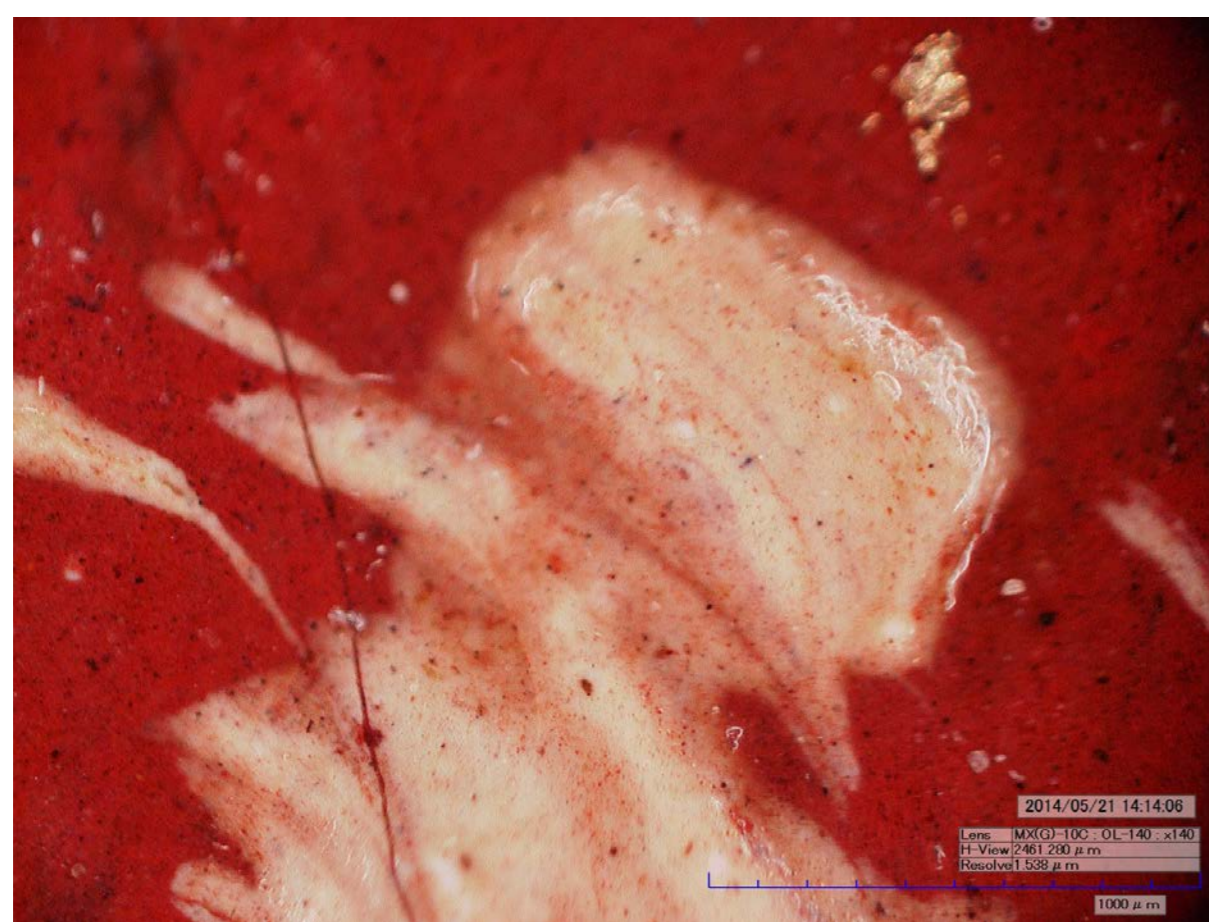
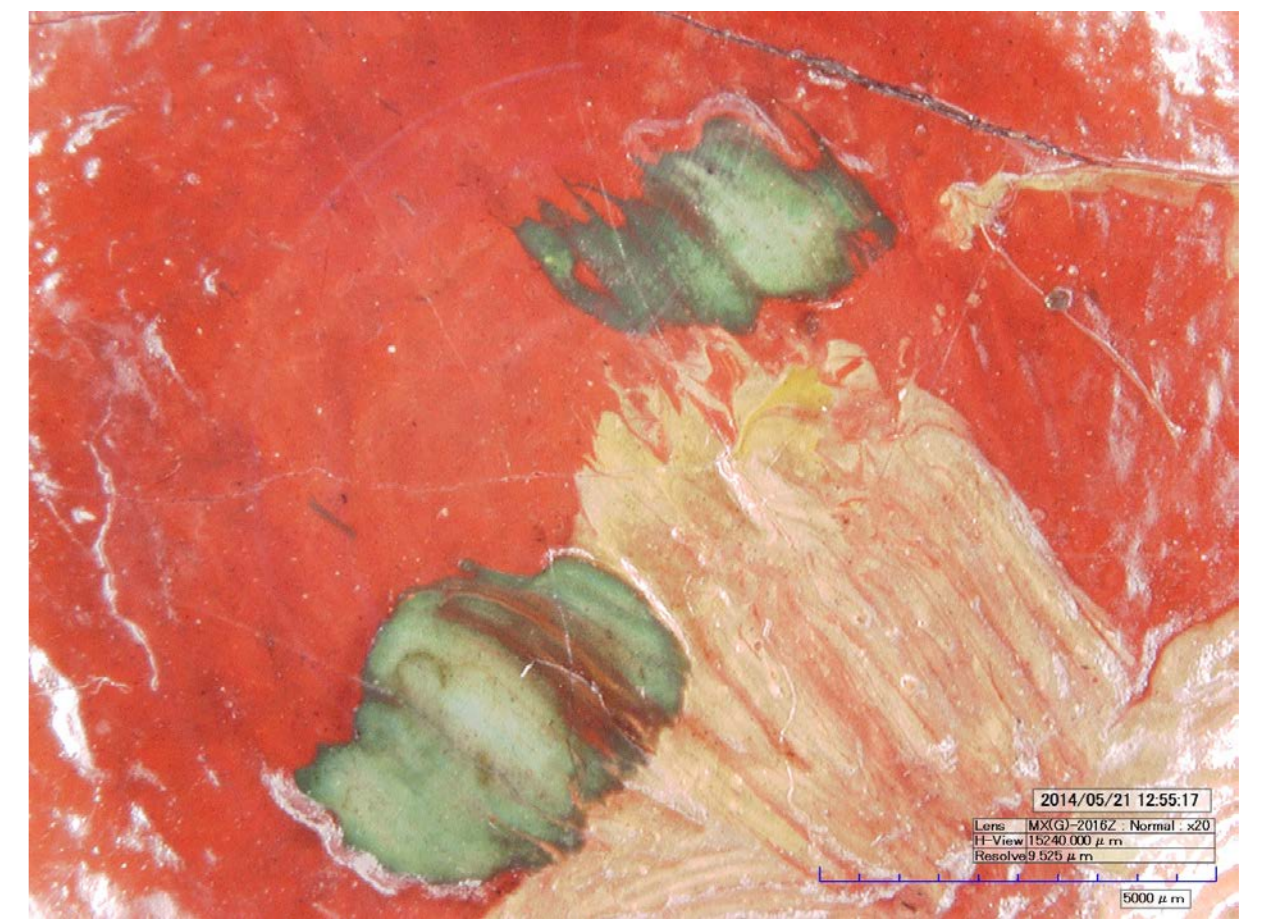
Horizontal Bridge stand



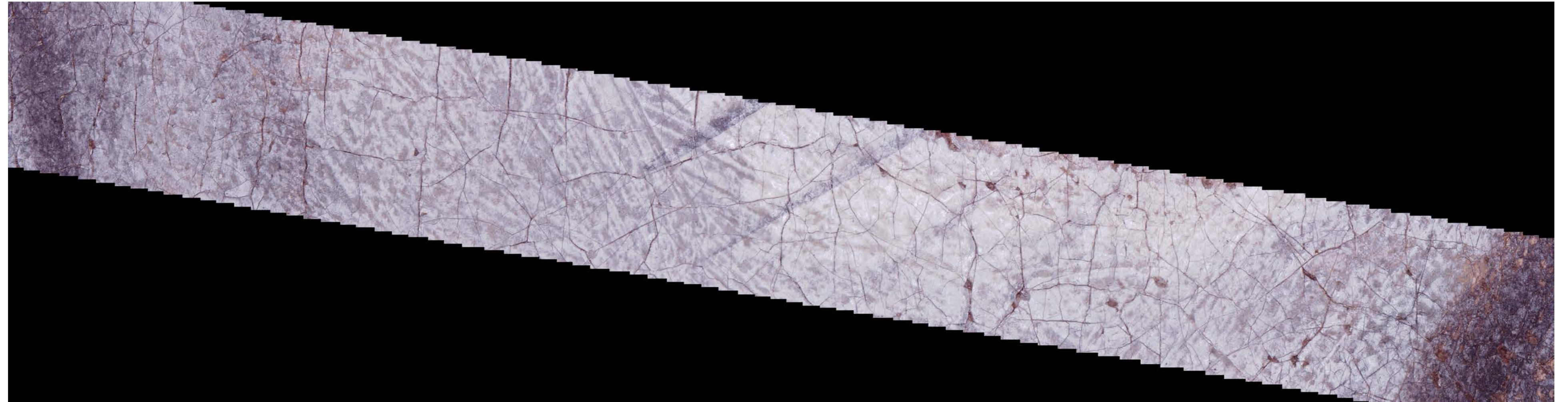
Bright field



Dark field



A Investigating ancient retouches covering the craquelure as seen under different light conditions:
A Bright Field
B Dark Field
C Raking Light



Brush work by Frans Hals of a Regent's cuff using the tiling option in the KH7700. Live tiling by moving the microscope camera over the horizontal high precision bar of stand

Studies of the condition of Karel Appel 1950/60's paintings at the Henie-Onstad Kunst-senter in Norway illustrating fabulous brush work but also severe damage due to internal chemical reactivity causing exudation, dripping, premature cracks and delamination.

- ◆ Rotary Head attachment on a MX2016-Z lens looks sideways rotating over 360 degrees

