

MSP Application Note Inks & Documents

J&M microscope spectrometer systems for inks & document analysis in forensic sciences

The J&M TIDAS MSP400 and MSP800 is an instrument used worldwide by scientists to compare the spectra of inks and document samples.

With the J&M TIDAS MSP400 you can acquire spectra in transmission as well as in reflection (brightfield and darkfield). The wavelength range of the spectrometer is 360nm to 780 nm.

For polarisation experiments a polarizer with compensator can be inserted into the optical beam. The spectral range for polarization is limited by the polarizer to 450nm - 700nm. In reflectance mode, the spectral range goes from 360 nm to 780 nm.

Fluorescence measurements can be done as well, several sets of filters are available (UV-, blue- and green-excitation is normally standard).

Additionally, a fast scanning monochromatic light source (260-680nm) is also available.

A full spectrum (360 nm to 780 nm) is usually acquired in less than 1 second.

Noise and acquisition speed depends on the chosen field of interest, given by the flexible adjustable measurement diaphragm. Minimum spot size is 2µm by 2µm using a 40x objective.

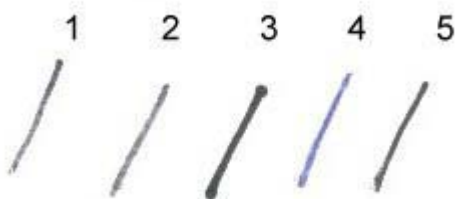
If the microscope offers UV-capabilities, the MSP400 can be upgraded to the MSP800.



MSP400 with a Leica DMR microscope

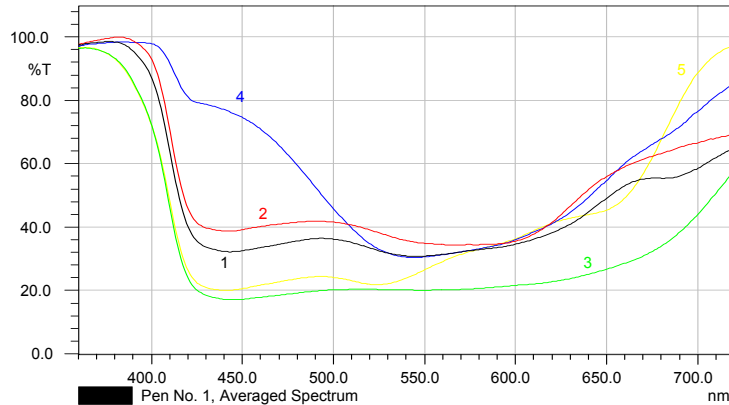
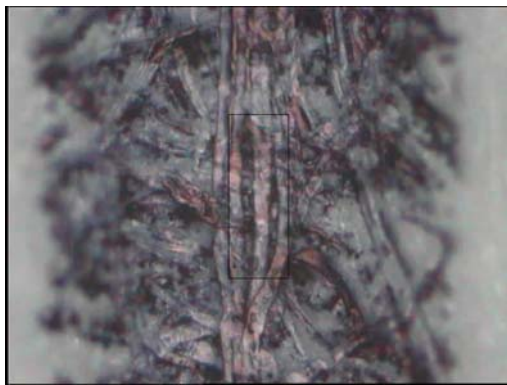
The following examples show the camera pictures and the corresponding spectra of different samples, analysed with a MSP400 microscope spectrometer system.

1) Ball-Pen Inks on Documents:



Different ball-pens were used on white paper. Four of them are black and one – no.4 – is blue.

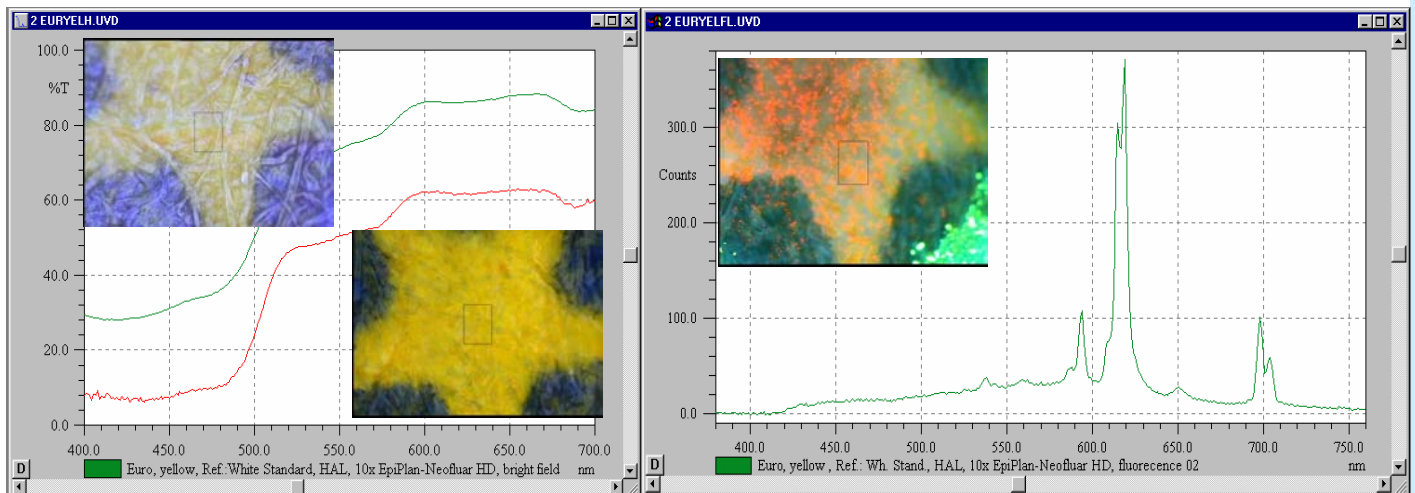
On line video imaging and simultaneous acquisition of spectra is a highlight of this instrument. The flexible adjustable measurement diaphragm marks the region of interest directly on your sample image.



Camera picture of ball-pen no. 1

Spectral characteristics of ball-pen no. 1 – 5

2) Yellow star on a 50 Euro banknote:



Camera images and spectra in bright field, darkfield and fluorescence

J&M's Software allows easy instrument control. Additional available software packages offer many possibilities for datahandling, documentation, export options and storage. You can create your own spectra libraries for an effective library search. The instrument uses the CIE colour value system and is capable of generating complementary chromaticity coordinates (CCC) values. Wavelength or photometric accuracy can be checked easily by grey or holmium filters, which are available as accessories.

Applications for the MSP instruments from J&M

- examination of fibres in the UV-VIS-NIR range
- analysis of particles in the UV-VIS-NIR range
- certification of documents
- quality control of TFT-displays
- analysis of LED`s