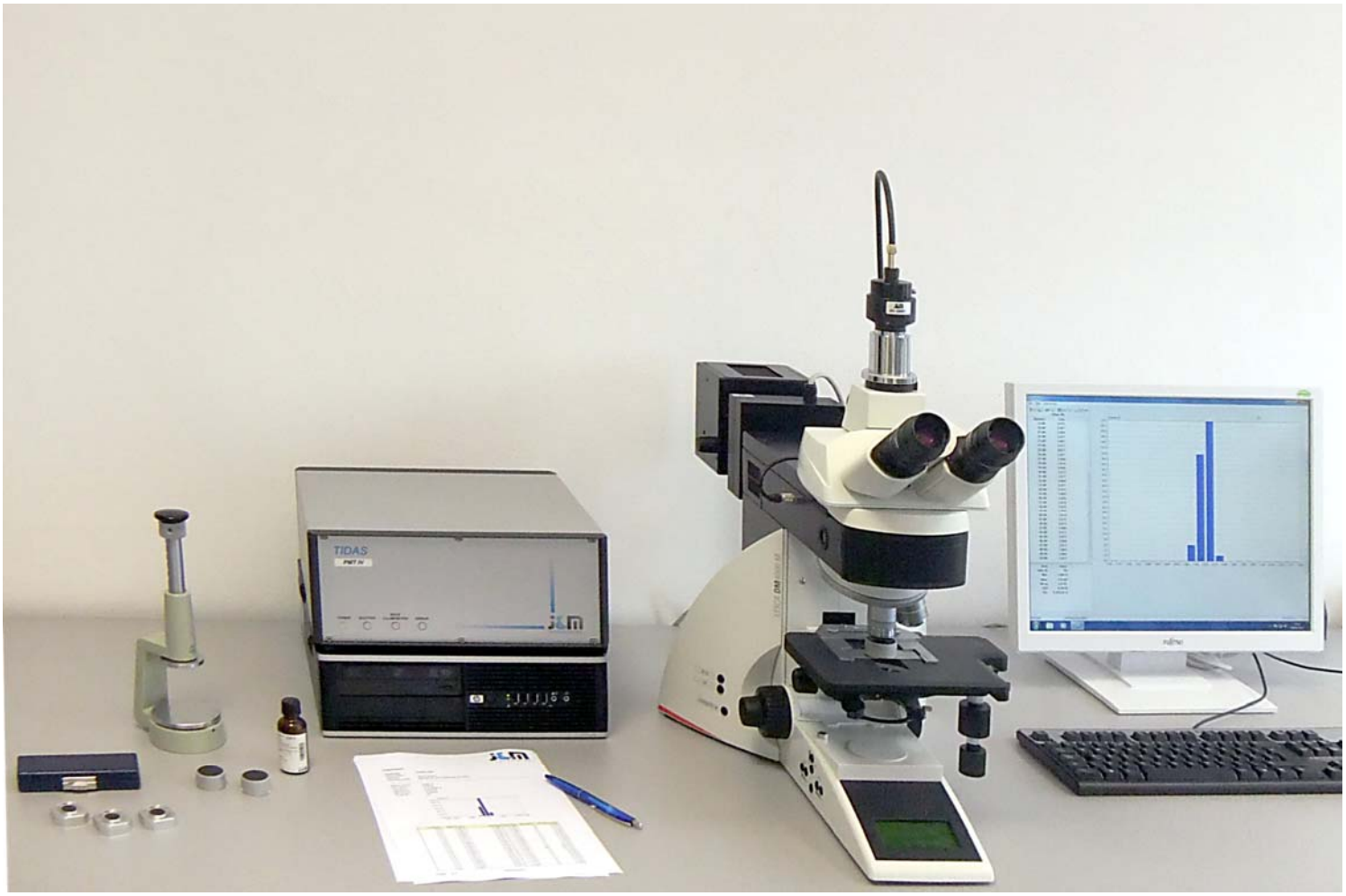
TIDAS S MSP200

MICROSCOPE PHOTOMETER
FOR COAL PETROGRAPHY



Made in Germany

by

J&M Analytik AG

Qualified for numerous techniques/tasks:

The **vitrinite reflectance measurement** is the classical method to determine the maturity (rank) of coals. It is a standardized procedure fully conforming to the German DIN 22020 or international ISO 7404/5 and ASTM D2798-99. With the J&M Tidas S MSP200 these measurements can be done easily and quickly and the results are automatically documented in a report in WORD or EXCEL format.

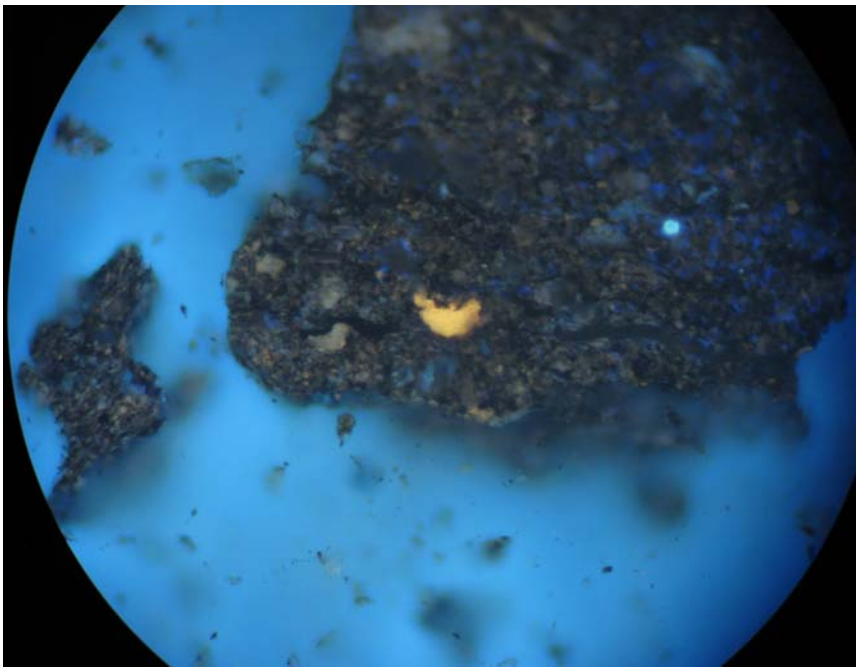
For the calibration of the detector a variety of very robust reflection standards are available:

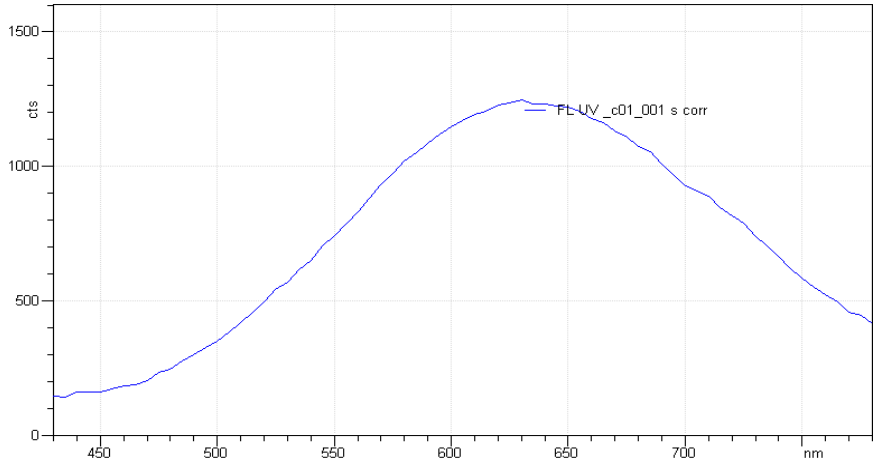
Strontium Titanate	R about 5.3%
Cubic Zirkonia (C-Z)	R about 3.2%
Gadolinium-Gallium-Garnet (GGG)	R about 1.7%
N-LASF46A	R about 1.3%
Yttrium-Aluminium-Garnet (YAG)	R about 0.9%
Sapphire	R about 0.6%
Spinel	R about 0.4%
Glass NG1	R = 0%

Most work is done with non-polarized light to get the so-called **Random Reflection R_0**. However, the easy-to-use MSP200 software can also process measurements in polarized light providing result as the **maximum reflectance** or – by using the **min-max method** -- both the minimum and the maximum reflectance values representing the amount of the anisotropy of the sample.

Maceral analysis by **Point-Counting** is another method that is supported by the MSP200 software. The program can control a motorized microscope stage making the work particularly comfortable.

Image showing fluorescence





Fluorescence spectrum of the particle in the center

Further upgrading of the equipment can be done with a **sensitive CCD spectrometer**. It turns the system into **TIDAS S MSP 400**, a **microscope spectrometer** that can not only fulfill the functions of the photometer described above, but also can additionally measure **fluorescence spectra**. Samples with increasing maturity (rank) show a characteristic shift of the fluorescence light towards larger wavelengths. Usually this method is applied if not enough vitrinite is present in the sample.

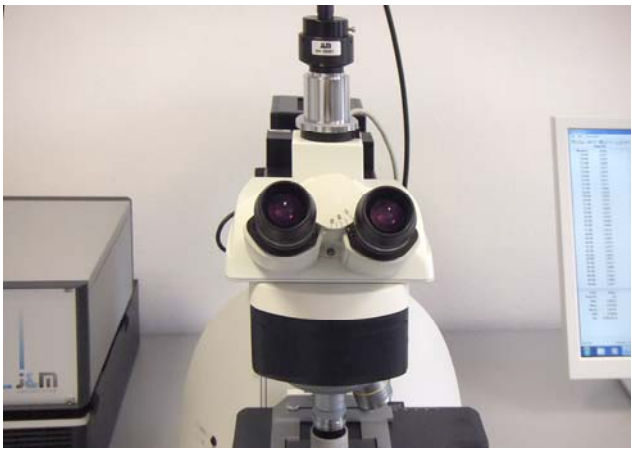
For the purpose of data-analysis, the software is capable of calculating a variety of parameters from the spectra according to freely definable formulas. Among many others there are some more established analysis techniques like

- **wavelength of peak intensity (λ_{max})**
- **red/green quotient $Q=I_{650}/I_{500}$**
- **evaluation of areas** under the spectral curve e.g. **QF_{535}**.

The TIDAS S MSP200 is adaptable to microscopes of different brands

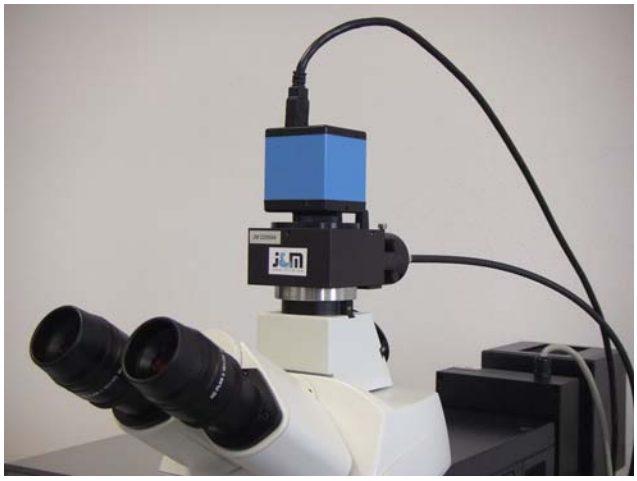
- Required features are: a reflected light bright field illumination, a phototube with a beam splitter (for example: 50% of eyepiece / 50% photo output) and an oil-immersion objective optimized for low backscatter (usually with 50 times magnification).
- Even older microscopes with comparable equipment can be adapted.
- Vintage microspectro photometers like the Leitz MPV or Zeiss MPM can be modernized with our components and, if possible, even functions such as the automatic pivoting of the luminous-field diaphragm can be obtained.
- Normally we offer adaptations to new microscopes from Leica, Olympus and Zeiss.

The basic configuration already includes all necessary components.



Optionally available features:

- Variable measuring diaphragm
- Camera to mark the measuring diaphragm and for documentation



- CCD spectrometer replacing the photomultiplier detector
- Rotary stage pol and object guide with click stop
- x-y scanning stage for easy positioning and automatic scanning

The strengths of J & M products

- J & M has more than 15 years of experience in microscope spectroscopy
- J & M MSP systems are continually being improved
- We offer a comprehensive service.
    - Extensive counseling including test measurements before buying to demonstrate the performance of the application
    - System integration before shipping
    - Installation and training at the customer's site
    - After-sales support by phone, email, Skype and remote support
    - On-site service on the basis of an annual maintenance contract or on demand.
- Excellent price-performance ratio
    - We offer high-quality components throughout to ensure that the best possible results can be achieved.
    - The systems have low-maintenance and robust durability and thus keep down the operating costs.
- Easy handling
    - Short measurement times and simplicity of the very user-friendly software facilitate the work. The documentation of the results is already included in the standard version. Special analysis techniques can be created according to customer requirements.

All these made J&M world market leader in microscope spectroscopy!