

# mIRoPort – portable and Desktop NIR-Spectrometer for plastics

With the Infrared spectrometry (NIR) of the **IoSys units** it is possible to identify plastics coming from the household-, engineering electronics and automotive application field. It allows direct analysis of non-dark-colored plastic parts (**films, foils, granules, solid, foamed**) and other materials like carpets and textiles.



The **basic principle** of the method is the diffuse near infrared reflection spectroscopy whereby characteristic absorption behaviors of different polymer types are used in that spectral region. The polymer sample is radiated with a



infrared light and the reflected light of the measuring place is analyzed using a near infrared detector array. To measure transparent materials a white ceramic must be placed behind the sample as a reflection mirror.

For **plastic identification** the measuring rod is simply pressed on to the analysis sample. The measurement begins by pressing the start button on the rod. Within a second an integrated LCD-touchscreen shows the recognized polymer. The measuring rod is connected with an 80 cm cable to the instrument. The portable device includes the optical NIR-system and the computer, which controls and evaluates the identification process. Parameter settings like model selection can be set by the LCD-touchscreen. A panel meter shows the actual voltage of the rechargeable battery pack. The portable unit can be operated with an external 5VDC-power supply, too.

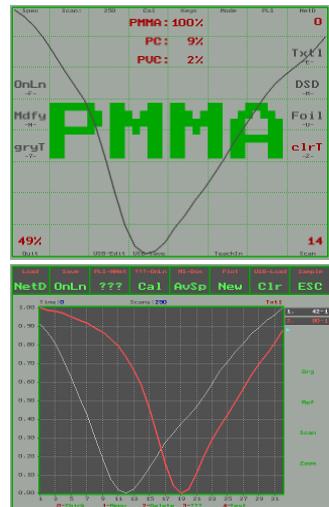


Using the device as a stationary **Desktop unit** the connection of an external VGA monitor and a keyboard is possible. Additional connections like an USB-interface allow external data transfer. A **Mini-Plotter** printing out the results is integrated (Dimension in mm: 265x135x165, weight: 3,7 kg, power supply: 100-230 VAC, 50/60 Hz).



**Identification of different plastic types** is the result of a trained pattern recognition. After the measurement of the plastic sample the optical information are processed by a neural network. The result of the calculation is a list of the most probable polymer type identified within a probability of 0 and 100%.

The software allows detailed spectra viewing, loading, saving and editing. This possibility helps to develop own applications.



With the **mIRoPort** it is possible **independently of surface structure and contamination** to identify relevant plastics and their mixtures within 1 second as following:

**PA6/PA66, PA12, PE, PP, ABS, PS, PPO, SAN, PC+PBT, PC, PC+ABS, PBT, PET, PMMA, POM, ABS+PVC, PVC, PE+PA, PE+PET, PP+PET, PLA and Cellulose.**

- ✓ Identification of plastics from household- and electronics waste as well as carpets and textiles
- ✓ On site analysis, e.g. in storehouses, storage areas, on trucks or containers
- ✓ Non-destroying measurement
- ✓ Less than 1 sec. measuring time
- ✓ Easy operation with LCD-touchscreen or external display and keyboard
- ✓ Easy measurement of granulate pieces possible
- ✓ Detailed spectra overview for easy evaluation
- ✓ 8 additional materials/spectra can be added
- ✓ Operation with rechargeable batteries and/or external VDC-power supply
- ✓ 4 - 5 h operation time with integrated batteries

According to different demands in recycling matters, customers can arrange to have the **system calibrated using their own samples**.

