

sIRo – stationary Infra-Red optic for Identifying Plastics

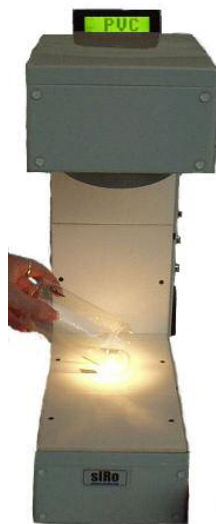
High level material plastic recycling demands that plastic materials must be **sorted** according to **various types** IoSys - Dr. Timur Seidel e.K. has taken part in solving the problem. A **stationary but flexible Infra-Red optic** was developed by IoSys It will help to make further amounts of waste polymers available for re-use.



With the technique of the so-called near Infrared spectrometry (NIR) it is possible to identify plastics coming from the household-, engineering electronics and automotive application fields. It allows direct analysis of non-dark-colored plastic parts (**films, foils, bottles, 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.

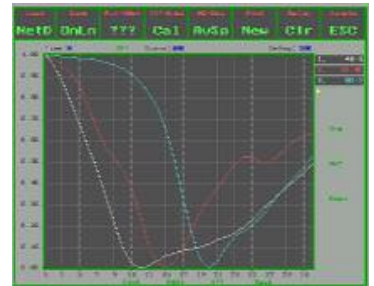
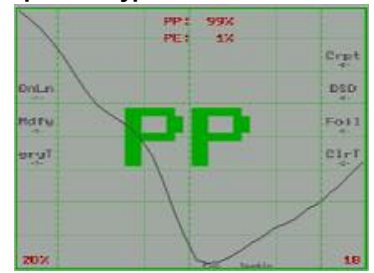
For **plastic identification** the sample is simply pulled through the open U-shape of the unit below the IR light source and the measuring head. Within a few milliseconds the identified polymer is shown on the turnable LCD-touchdisplay mounted on top of the unit. The portable device which can be carried on its handle 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-touchdisplay. Additional connections like a serial interface allow external data



transfer. As **optional features** a battery operated **Mini-Plotter** printing out the results and an **relay-interface board** generating output signals for sorting systems are available. (dimension in mm: 480x160x360, weight: 6 kg, power supply: 100-230 Volt~, 50/60 Hz).



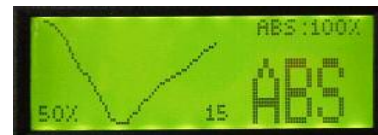
Identification of different plastic types is the result of a trained pattern recognition. After the measurement of the plastic sample the optical information (absorption bands of overtone- and combination vibrations) are processed by a neural network. The result of the calculation is a list of the most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



For detailed spectra viewing, loading, saving, editing spectra etc. an external keyboard and a VGA-Display can be connected. This possibility allows to **develop own applications** easily (e.g. identifications of carpets, textiles, food etc.) or to find out particularities (mixtures).

- **Recycling of household-, engineering electronics and automotive waste plastics**
- **Contactless and Non-destructing measurements**
- **Less than 1 sec. measuring time**
- **Independent of surface structure, moisture and contamination**
- **Possibility of calibration and editing of up to 8 individual plastics or mixtures by customer**
- **8 signal online-output for sorting machines**

With the help of the Near Infra-Red optic it is possible **independently of surface structure, moisture and contaminations** to analyze **within 1 second** as following: **PA6x, PA12, PE, PP, ABS, PS, PPO PCA, PBT, PET, PC, PMMA, POM, PVC, ETFE**



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

For further information:

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