UV/Vis/NIR Spectrophotometer (V-770, JASCO)

The integrating sphere (Fig. 1) must be plugged/unplugged when the instrument is **turned off!** Short circuit damage hazard if manipulate with its connector while the tool is running.

If the integrating sphere is connected and you will not use it, **disconnect the integrating sphere FIRSTLY** (Fig. 1) before installing another holder module instead.

1. Switch on the spectrophotometer (Fig. 2-1) and PC (the PC is shared with ZetaSizer).

2. Switch on the [SpectraManager] by double-clicking the icon located on the PC desktop. The program is separated into two parts: a) Instrument = measurement, b) Analysis = result analysis.

3. Connect the selected sample holder module (except the integrating sphere).

   Unscrew and take out the currently installed module and install the new one. Secure it with sample compartment set screws (Fig. 2, description 2). The instrument will automatically recognize the accessory. All accessories are available in the cabinet labeled ´CEITEC NANO – UV/Vis/NIR´ behind the PC.

4. Double-click on [SpectraMeasurement] to start the program. Save the [Parameters] data: Press the icon and save data files: Settings - C:/V770/Data/User´s folder (in .upc file).

5. Press the [Parameters] and display the dialog box with the parameters of measurement. Parameters can be set up in two modes: Parameters Basic and Parameters Advanced.

   Parameters Basic:

   - the [General] tab: Photometric mode (%T, Abs, %R); Bandwidth, Wavelength range (start and end), Scan speed, Vertical Scale, Accumulation and No. of cycles.
   - the [Flowchart] tab: the message for the operator during each measurement steps (left it OFF).
   - the [Data] tab: Sample name. All data is saved.

   Parameters Advanced:

   - the [Correction]: None, Baseline, Baseline/Dark.

6. Press the [Baseline] button to measure a baseline. More details about Baseline measurement are available in the *UVVisNIR Spectrophotometer Software manual, page 44*.

7. Insert the sample and press the [Sample] button to measure the sample spectrum. Repeat this step additional samples.

8. Use the Spectra Analysis for the data analysis.

More details are available in the *UVVisNIR Spectrophotometer Software manual, pages 36 – 45*, placed on the PC desktop.

9. Switch off the PC, remove the sample from the holder, and switch off the spectrophotometer.

10. If you used the cuvettes (plastic for the Uv-VIS range, glass for the NIR range), don´t wash the plastic cuvettes with IPA and acetone (degradation). Use only your solvent, water, and ethanol.

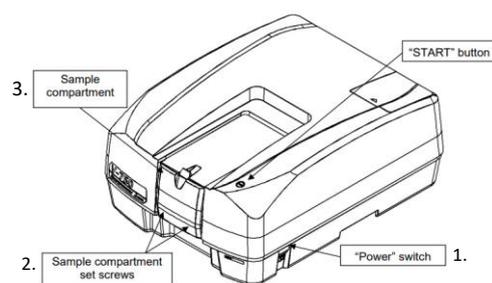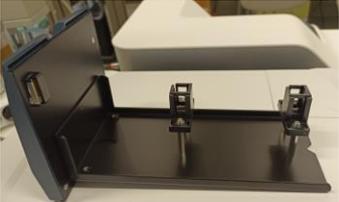| Fig. 1: Connection of the integrating sphere. | Fig. 2: The main parts of the spectrophotometer. |

Accessories:

1) Integrating sphere (ISN-923, Fig. 3):
  a) Baseline – spectralon;
  b) Mode – reflectance (powder), transmittance (film and liquid);
  c) Substance - liquid (cuvette), film, powder (powder holder PSH-002, the diameter of the measuring area: 16 mm, sample thickness 0.5-6 mm, **be careful with the opening** – the glass may fall off and shutter);
  d) More details – Manual: Integrating Sphere.
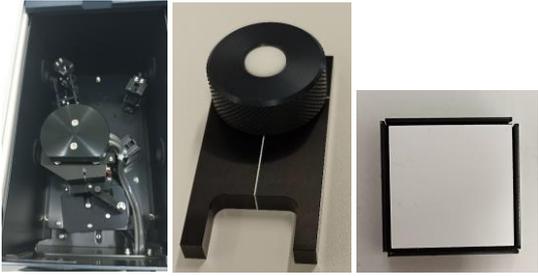	
	Fig. 3: Integrating sphere. Powder holder. Spectralon.

2) Specular Reflection Unit (SML-907, two mirrors, Sample mask SML-736, Fig. 4):
  a) Baseline – two mirrors;
  b) Mode: reflectance;
  c) Substance: film, always measure with a mirror placed on the baseline position.
  d) For more details, check the Manual: Specular Reflection Unit.
	
	Fig. 4: Specular Reflection unit and Sample mask.

3) Film holder (FLH-741, Fig. 5):
  a) Baseline – air;
  b) Mode – absorption, and transmittance;
  c) Substance – film, minimum sample size: 5(H) x 5(W) x 0.5 (T) mm,
  d) maximum sample size: 80(H)×100(W)×25 (T) mm.
  e) More details – Manual: Film holder.
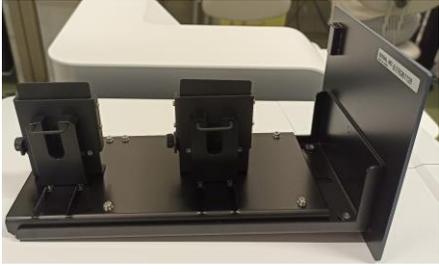	
	Fig. 5: Film holder.

4) Long optical path cuvettes (LSE-701, Fig. 6):
  a) Baseline – liquid or empty cuvette (10, 20, 50, and 100 mm);
  b) Mode – adsorption and transmittance;
  c) Substance – liquid;
  d) More details – Manual: Long Path Cell Holder.
	
	Fig. 6: Holder for longer optical path cuvettes.

5) Cuvettes (Fig. 7):
  a) Baseline – liquid or empty cuvette;
  b) Mode – adsorption and transmittance;
  c) Substance – liquid;
	
	Fig. 7: Standard cuvette holder.