**Physical Properties Measurement System (PPMS)**

completed by responsible coordinator of equipment

**Equipment: PPMS (Physical-Properties-Measurement-System)**

**No. of Equipment:** *UPOL 14*

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**Equipment Description**

**Description of equipment:**

The physical properties measurement system (PPMS) is a complex device allows to operator a broad option of measurements including magnetic properties, electro-transport properties and thermal properties. PPMS using a vibrating sample magnetometer (VSM) for the magnetic moment detection and provide both, DC (direct current) and AC (alternative current), types of measurement in a wide range of temperatures from 1.9 K – 400 K and the presence of external magnetic field ranging from -9 T to +9 T. The Electrical Transport Option (ETO) enables users to make several different types of transport measurements over a wide range of resistance values and sample types. The ETO supports three types of measurements including resistivity, IV curves and differential resistance. The current source has a minimum precision of 1 nA and a maximum current of 100 mA. It is capable of supplying both DC and AC current with frequencies from 0.1 Hz to 200 Hz. Last, but not least the heat capacity measurement is also possible at PPMS to complete the full magnetic information.

**Specification of expertise relevant to NanoEnviCz workpackages:**

**WP3**a,c-f,h, **WP4**a,b, **WP5**a,c, **WP6**a,f **WP7**a-e,h-i, **WP8**d

**Detailed description of expertise**

**Please, specify the main research topics connected with equipment**:

Magnetism, magnetic properties,

**Please, specify the secondary research topics connected with equipment**:

Heat capacity, resistivity, IV curves, differential resistance

**Keywords describing research area:** magnetism, nanoparticles, spin-crossovers, molecular magnets

**Competence**

**Relevance for applied and industrial research:**

Estimation of magnetic behavior, electro-transport properties and thermal properties in different temperatures and external magnetic field which is important in many industrial areas.

**Relevance for fundamental studies:**

Basic magnetic characterization fully completing obtained results from other measurement techniques and helps to understand the behavior on atomic level. Moreover the whole global magnetic behavior of measured samples can be enriched by information about electro-transport and thermal properties.