

## Magnetization measurement methods

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Measurement of magnetic properties (especially magnetization) under (multi)extreme conditions is a difficult task. In the vicinity of the room temperature or above it an abundance of methods is available, with decreasing temperature and adding magnetic field and/or hydrostatic pressure their number is limited. MPMS (Quantum Design) magnetization measurement has a great precision, but it has temperature limit – down to 1.8K. Also the pressure experiments decrease the precision due to mass of the pressure cell with limit of 1GPa. The VSM system (PPMS, Quantum Design) provides magnetization measurement down to 2K and no possibility of pressure application.

In order to extend the range of applicable parameter we use the Hall probes (manufactured by

Arepec s.r.o.) for indirect measurement of sample magnetization under investigation. Our test shows that this simple method is rather sensitive and after careful calibration could be used to very low temperatures ( $T \sim 50\text{mK}$ ) or applied hydrostatic pressures (up to  $\sim 3\text{GPa}$ ). The set-up was used for characterization of magnetic phase diagram in various compounds ( $\text{Ce}_3\text{PdIn}_{11}$ ,  $\text{CePtIn}_4$ ,  $\text{U}(\text{Co}, \text{Ru})\text{Al}$ ,  $\text{HoCo}_2$ ,  $\text{CePd}_2\text{Ga}_3$ ,  $\text{UIrGe}$ ,  $\text{U}_4\text{Ru}_7\text{Ge}_6$ ) without and with hydrostatic pressures with focus on characterization of single crystals at very low ( $T < 2\text{K}$ ) temperatures.

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