

Vibrating Sample Magnetometer Oven

DynaCool (D527) / PPMS (P527) / VersaLab (V531)

The VSM Oven option allows the temperature range of the conventional VSM option to be extended upwards to 1000 K. This option employs the standard VSM coilset and transport motor but uses a special alumina sample holder with an integrated resistive heater and temperature sensor to locally heat and sense the sample temperature. A special sample rod and a hermetically sealed wired-access-port (WAP) provide electrical access to the oven sample holder. The nearby VSM coil set is protected by shielding the sample in a copper foil and operating in a high-vacuum environment (hi-vac capabilities are a prerequisite for the VSM oven).



VSM Oven heater stick sample holder in the included sample mounting station (depicted discoloration is typical). Also shown are components of the optional P540 Dry Mount Kit, allowing samples to be secured without the use of the standard cement.

Key Features:

- User kit comes standard with sample mounting high temperature Zircar cement and copper radiation shields
- Pre-mounted high purity (99.994%) nickel reference sample ($T_c=627$ K) allows for quick verification of oven performance
- Optional dry-mounting kit allows for easy mounting of samples (e.g. thin films on substrates) without the need of cement

VSM Oven Specifications (for zero-field, unless indicated)

Temperature [T]

Range*:	300 to 1000 K
Ramp Rate:	Up to 1000 K/min.
Accuracy:	$\pm 2\%$ after stabilizing
Stability:	± 1 K, for fields up to 14 T

Magnetic Moment [m]

Accuracy**:	$\pm 2\%$ or $6 \cdot 10^{-6}$ emu, whichever is greater
Noise Floor***:	$< 6.0 \cdot 10^{-6}$ emu @ 300 K
Additional Relative Noise***:	$5 \cdot 10^{-7}$ emu/T or 0.5%, whichever is greater

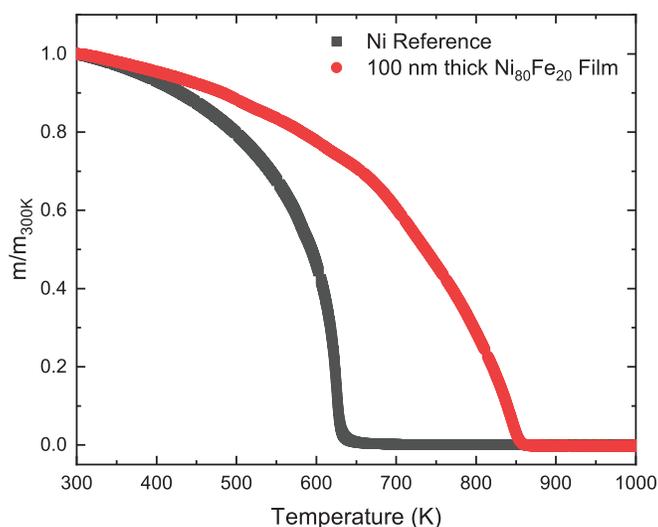
Operational Range	300 to 1000 K; 0 to 16 T
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*Please note, heater stick sample holders **cannot** be cooled below 300 K. The material becomes very brittle at colder temperatures and will likely fail.

**The background signal from the heater stick sample holder is not necessarily reproducible from holder to holder, which in turn will reduce accuracy.

***Parameters are integration-time dependent; stated values are for integration times of 1 second at 40 Hz, 2mm amplitude excitation. Total observed noise is the sum of the floor and relative components.

Specifications are subject to change without notice.



Normalized moment as a function of temperature for the included Ni reference (black) and a 100 nm thick Permalloy thin film (red) exhibiting the Curie temperature of each.