Quantum Design

# First Order Reversal Curve (FORC) Software for VSM

DynaCool (D181) / PPMS (P181) / VersaLab (V181)

First Order Reversal Curve (FORC) measurements and their subsequent analysis provide additional insights into the magnetic reversal mechanisms of bulk, thin film, and nano-patterned samples that conventional major hysteresis loops cannot. These families of curves can provide a qualitative/quantitative fingerprint of various magnetic reversal mechanisms, as well as aid in distinguishing between reversible and irreversible switching mechanisms. Further applications of the technique include the ability to calculate reversal mechanism phase fractions along with coercivity and interaction field distributions.

## VSM FORC Specifications

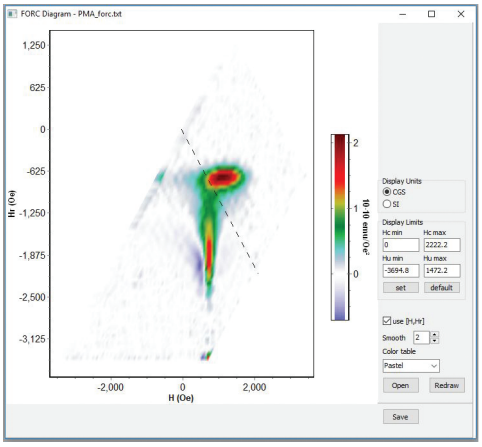
See VSM Standard / Large Bore / Oven Specifications for Details

**Operational Range** 1.8 to 1000 K; 0 to 16 T

Specifications are subject to change without notice.

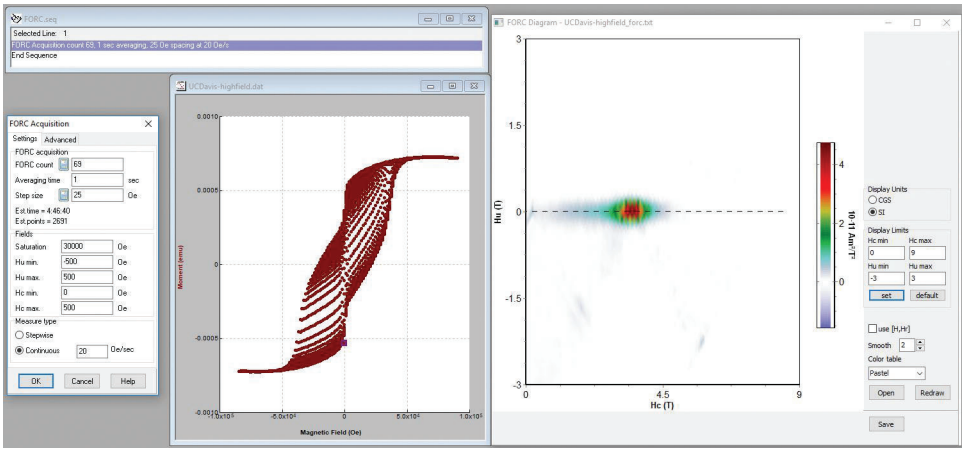
## Key Features:

- Fully automated FORC acquisition using MultiVu
- FORC distributions can be calculated and displayed in real-time during a measurement
- Users can change between the ($H_c$, $H_u$) and (H, $H_r$) coordinate systems as well as update the smoothing factor, color scheme, and measurement units on the fly
- Compatible with any Quantum Design VSM configuration including the standard and large bore coil sets and the VSM oven
- Resulting output data file is preformatted for easy import into the FORCinel post-processing software




*The FORC distribution of a [Co(0.5 nm)/Pd(1 nm)]$_{10}$ film exhibiting perpendicular magnetic anisotropy is plotted in the (H, $H_r$) coordinate system. Sample provided by Prof. Kai Liu, Georgetown University.*

## MultiVu User Interface




*FORC measurements can be easily incorporated into standard VSM sequences. The FORC distribution of a high anisotropy FePt thin film is plotted in the ($H_c$, $H_u$) coordinate system. Sample provided by Prof. Kai Liu, Georgetown University.*