

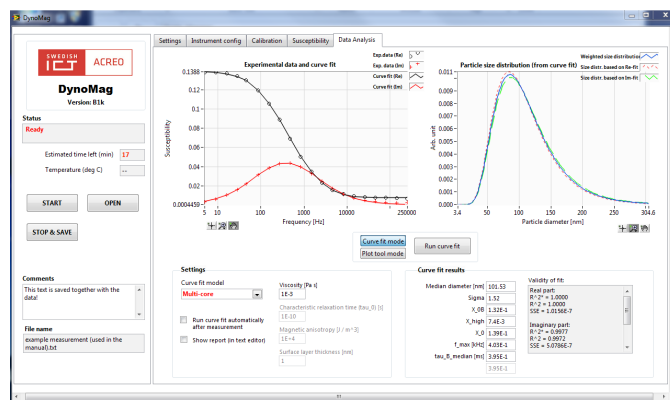
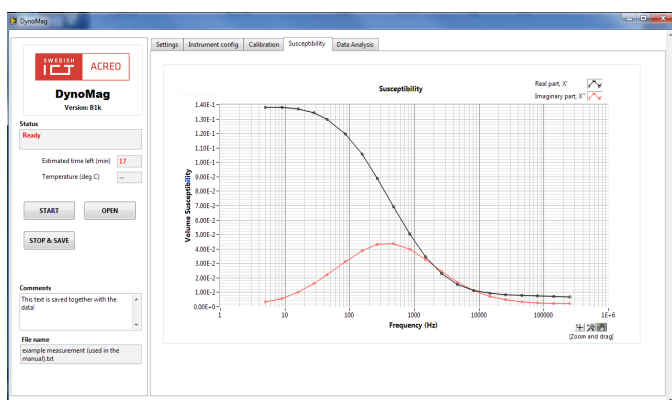


DYNOMAG AC SUSCEPTOMETER

DynoMag is a portable, easy to use AC susceptometer. It measures the real and imaginary components of the AC susceptibility in a wide frequency range. The instrument enables determination of the dynamic magnetic properties of liquids, powders or solid samples.

Typical application areas include:

- Measurement of size distribution of magnetic nanoparticles (MNP)
- Quality control during synthesis and manufacturing of MNP
- Studies of binding reactions of biomolecules to the surface of MNP



A DynoMag measurement of the AC susceptibility versus frequency for magnetic nanoparticles dispersed in a liquid (Chemicell FluidMag cobalt-ferrite). The decrease in real part and the maximum in imaginary part of the susceptibility around 400 Hz is due to Brownian relaxation of the nanoparticles. The residual non-zero real susceptibility above 10 kHz comes from fast Néel relaxation.

A fit to the measured data in the left figure. With the analysis package you can fit your experimental DynoMag data and determine the particle size distribution from the Brownian relaxation as well as Néel relaxation of single core particles.

Property	Value	Comments
Frequency interval	1 Hz - 500 kHz	Measurement accuracy is lower below 5 Hz
Excitation field	0.5 mT = 5 G	The magnetic field strength is constant below 1 kHz, falling off at higher frequencies
Volume susceptibility resolution	$1 \cdot 10^{-5}$	The value is the standard deviation of the volume susceptibility, measured at 1 kHz, with an excitation field of 5 G and a time constant (measurement time) of 1 s.
Sample size	Cylindrical sample holder with volume 0.2 cm^3	The sample volume can be customized to smaller volumes than 0.2 cm^3
Measurement time	Typically around 15 minutes	Depends on the number of data points chosen, 15 minutes is for 20 points
Operating temperature	Normal lab temperatures	

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