



KLY5 Kappabridge: High sensitivity susceptibility and anisotropy meter precisely decomposing in-phase and out-of-phase components

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The KLY5 Kappabridge is equipped, in addition to standard measurement of in-phase magnetic susceptibility and its anisotropy, for precise and calibrated measurement of out-of-phase susceptibility and its anisotropy. The phase angle is measured in "absolute" terms, i.e. without any residual phase error. The measured value of the out-of-phase susceptibility is independent on both the magnitude of the complex susceptibility and intensity of the driving magnetic field. The precise decomposition of the complex susceptibility into the in-phase and out-of-phase components is verified through presumably zero out-of-phase susceptibility of pure gadolinium oxide. The outstanding sensitivity in measurement of weak samples is achieved by newly developed drift compensation routine in addition to the latest models of electronic devices.

In rocks, soils, and environmental materials, in which it is usually due to viscous relaxation, the out-of-phase susceptibility is able to substitute the more laborious frequency-dependent susceptibility routinely used in magnetic granulometry.

Another new feature is measurement of the anisotropy of out-of-phase magnetic susceptibility (opAMS), which is also performed simultaneously and automatically with standard (in-phase) AMS measurement. The opAMS enables the direct determination of the magnetic sub-fabrics of the minerals that show non-zero out-of-phase susceptibility either due to viscous relaxation (ultrafine grains of magnetite or maghemite), or due to weak-field hysteresis (titanomagnetite, hematite, pyrrhotite), or due to eddy currents (in conductive minerals).

Using the 3D rotator, the instrument performs the measurement of both the AMS and opAMS by only one insertion of the specimen into the specimen holder. In addition, fully automated measurement of the field variation of the AMS and opAMS is possible.

The instrument is able to measure, in conjunction with the CS-4 Furnace and CS-L Cryostat, the temperature variation of susceptibility.