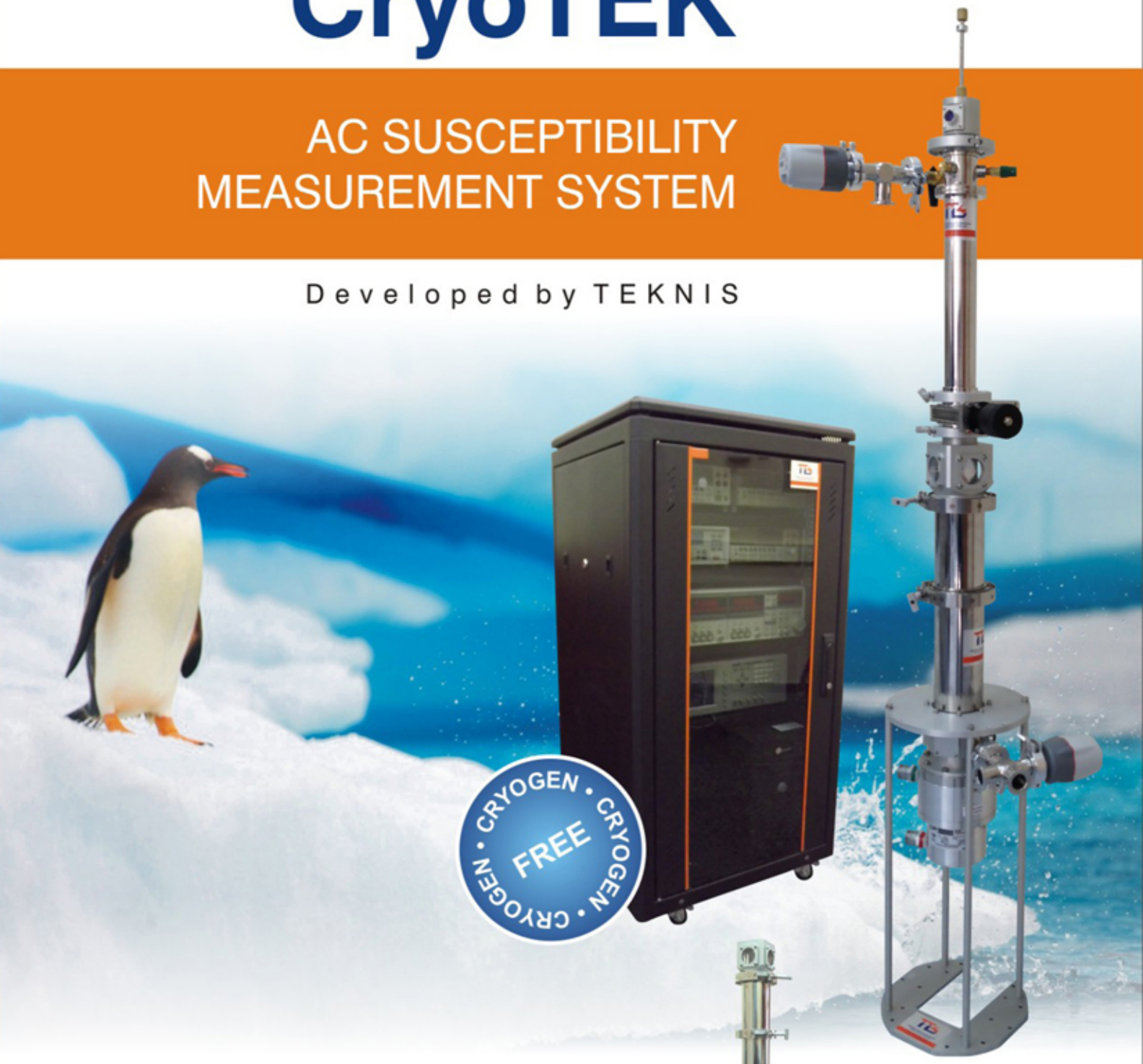
CryoTEK

AC SUSCEPTIBILITY MEASUREMENT SYSTEM

Developed by TEKNIS



- AC Susceptibility
- Resistivity
- DC I-V
- Photo Current
- Hall Effect (CryoTEK - Mag)

TİA TEKNİS
İleri Araştırma Sistemleri

CryoTEK
AC SUSCEPTIBILITY MEASUREMENT SYSTEM

A magnetic susceptometer probes the magnetization in a sample, and an AC technique yields important additional information about superconducting materials. An uniquie coaxial susceptometer design means that the signal is immune to variations in sample positions and external influences, and acqusitions with a digital lockin provides high performance and straightforward phase determination.

Systems have an operating temperature range of
<4 K, 6.5 K, 10 K and 15 K to 325 K, with optional high temperature (800K) stages available.
The systems are available in numerous configurations, including:

- Optical or Non-Optical
- Standard, Compact and Sub Compact sizes
- High Temperature Stages
- Low Vibration version for IR arrays or other vibration sensitive Experiments
- Up to 15 Oe and 20kHz
- Sample in vacuum changeable without vacuum breaking during cryocooler is cold

Magnetic susceptibility is an important probe of the the magnetization of a superconducting sample. DC measurements only give information about the equilibrium magnetization of the sample, whereas AC susceptibility can yield additional information about magnetization dynamics. The imaginary component is a measure of dissipative process of sample. Ac susceptibility is used to study superconductors and to investigate pheomena such as magnetic phase transition. The two secondary coils are coaxial and connected an in series and both are within the primary coil. This is much less sensitive to undesirable pickup from external objects. The sensivity inside the susceptometer is also more independent of the positon of the sample. This means that there is less sensivity to sample can be independent heatsink to platform rather than rigidly to susceptometer former.

CryoTEK-MAG AC SUSCEPTIBILITY MEASUREMENT SYSTEM

Cryogen-Free AC Susceptibility Cryostat with Superconducting Magnet System.
A complete cryogen-free system at a lower price than most other liquid helium style systems.
No more liquid cryogen continuing costs. No liquid helium transfers required; just 'plug and play'.

It has been developed a very versatile and economical low-temperature cryogenic system that not only eliminates the necessity of using liquid cryogens, but can be configured to perform a multitude of low-temperature experiments. A two-stage Gifford-McMahon Helium closed-cycle refrigerator that can obtain base temperatures of 10 Kelvin provides the refrigeration. An optional rare earth regenerator configuration can extend the base temperature to less than 4 K. The top-loading exchange gas configuration means that different experimental stages and samples can be easily and rapidly transferred into the cold stage without having to interrupt the operation of the refrigerator.

The AC Susceptibility top-load probe assembly is constructed completely from a non-magnetic composite material to minimize induced eddy current noise and magnetic contamination. The primary excitation coil can generate an AC magnetic field up to 10 gauss and the high turns density counter-wound secondary pickup coils provide high sensitivity with an equivalent level of 10E-5 emu. This setup is ideally suited for characterizing high temperature ceramic superconductor materials, particularly in determining the critical transition temperature.

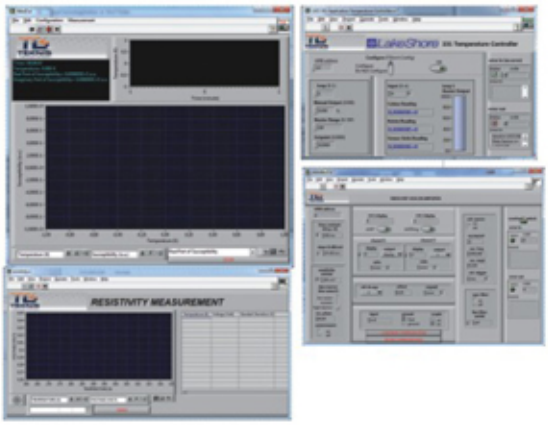
Some standard configurations for the experimental stages are **AC susceptibility, Hall effect, DC resistivity and high-frequency measurements.** Optional features include **optical light paths,** variable applied magnetic field, sample manipulators, and hot-stages that extends the experimental temperature range to **800 Kelvin.** Additional unique options for the top-load system are a rare-earth based Gifford-McMahon refrigerator which lowers the operating temperature to below the liquefying point of liquid helium; or alternatively a liquid helium continuous flow cryostat can be installed to provide a dual refrigeration unit.

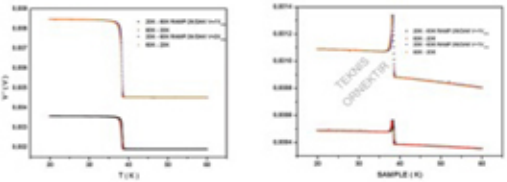
CONTROL OF THE CryoTEK AND CryoTEK-MAG AC SUSCEPTIBILITY MEASUREMENT SYSTEM

Control of the CryoTEK and CryoTEK-MAG AC Susceptibility Measurement System achieved via a client server computer architure- a desk, or rocktop, mounted control client running TEKLab – client communicates with a rack mounted server.
TEKLab software can incorporate nested stepping or smooth ramping of system environment parameters such as temperature, field, voltage, current etc.

Summary Specifacitons

- Completely cryogen free- low cost, low maintenance.
- A wide range of experimental probes gives you the greatest possible system flexibility. **The sample in vacuum is changeable without vacuum breaking.**
- Refrigeration
  - 1W (4K) Pulse or GM Tube Cryocooler or 10K GM Tube Cryocooler
- Temperature Range
  - <4K-RT standart system
  - <6.5K-RT
  - <10K-RT
  - <15K-RT
  - Up to 800K is optional
- Sample Field
  - Vertical Field, up to, 7T, 9T and 12T available
- Measurement options,
  - Combined AC Susceptibility, Resistivity, Hall Effect, DC I/V and PhotoCurrent Measurements





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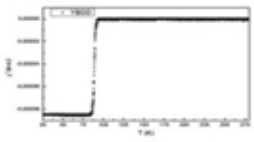

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