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Critical temperature investigation in high temperature superconductors by means of magnetic susceptibility measurements

I. Hanis , E.Halevas and G.Litsardakis,
Laboratory of Materials for Electrotechnics,
Department of Electrical & Computer Engineering,
Aristotle University of Thessaloniki, Greece

The Laboratory of Materials for Electrotechnics operates a QD Versalab system, capable of measurements up to 3 T at temperatures 50-400K, as well as a QD PPMS (Physical Properties Measurement System), with a 9 T magnet operating at 4-400 K. The Versalab is equipped with a VSM head and the PPMS with AC susceptibility, DC magnetization extraction and electric transport probes. Cooling of the superconducting magnets is achieved by closed cycle Gifford-McMahon cryopumps that do not require the prohibitively expensive liquid helium, but a moderate supply of affordable helium gas.
Thanks to the open architecture of the instruments and to in-house modifications, these measurement probes can now be interchangeably used in both systems, allowing for greater versatility and cost efficiency in their use.
In order to demonstrate the capabilities of the instruments, which are open to access by the scientific community, either as a service or in cooperation projects, in this poster we present magnetic properties investigations of high temperature superconductors and vanadium complexes.