

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Applications of superconducting trapped field magnets for x-ray scattering experiments¹ R.K. DAS, Z. ISLAM, J.P.C. RUFF, J.C. LANG, Argonne National Lab, R.P. SAWH, R. WEINSTEIN, University of Houston — Two long standing problems in x-ray and neutron scattering studies in applied magnetic fields are, 1) limited optical access and 2) practical impossibility to apply magnetic field parallel to x-ray (neutron) momentum transfer. In order to overcome these obstacles we have developed an application of Type-II superconducting magnets. In this approach, a small and thin plate-like single crystal sample is mounted on the surface of a melt-textured superconductor (SC). The SC is magnetized by cooling it from temperature above its superconducting critical temperature (T_c) in an applied magnetic field. Below T_c , magnetic flux gets trapped inside the SC disk after the removal of the external magnetic field. The SC disk acts as a permanent magnet with applied field normal to the flat surface of the disk providing unrestricted optical access to the entire hemisphere allowing a magnetic field parallel to the x-ray momentum transfer.

¹Use of the APS is supported by the DOE, Office of Science, under Contract No. DE-AC02-06CH11357.

Ritesh Das
Argonne National Lab

Date submitted: 30 Dec 2010

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