

## Magnetic Calorimeter Using a Miniature SQUID Susceptometer

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We established a calorimetric detector system operating at cryogenic temperatures. A dilute paramagnetic metallic alloy (Au: Er, 900 ppm Er doped in Au host metal), was employed as the sensing material whose magnetization varies with temperature. A low temperature SQUID susceptometer is used to measure the change of magnetization due to the increase of temperature caused by an input energy. The SQUID loop of the susceptometer is extended to form a first order gradiometer. The ID of the pick-up loops in a figure of 8 is 50  $\mu\text{m}$ . A disk-typed Au: Er sensor centered over one of pick-up loops is magnetized by persistent current loop of superconducting magnet. We will discuss various magnetic calorimeters together with SQUID susceptometers developed at KRISS to measure an X-ray energy spectrum of  $^{55}\text{Fe}$  and an spectrum of decay energy generated by radioactive decays of  $^{241}\text{Am}$ .

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