

Ratipat Yamyim 2012: Design and Construction of Resonance Vibrating Sample Magnetometer. Master of Science (Metrology), Major Field: Metrology, Department of Physics. Thesis Advisor: Assistant Professor Pongsakorn Jantaratana, Ph.D. 98 pages.

In this thesis, the resonance vibrating sample magnetometer (R-VSM) was designed and constructed for measuring magnetic properties of low-magnetic materials. The magnetometer system consists of a vibration unit, a pair of similar sensing coils, a gauss meter and an electromagnet. The material under test was attached to sample holder connected to the vibration unit and vibrated with the resonance frequency of 35.9 Hz. The vibration unit with sample and sensing coils was then subjected to the external magnetic field generated by the electromagnet. The induced voltage from the pair of sensing coils was measured by a lock-in amplifier and converted to the magnetic moment of the material. The performance of the R-VSM was tested by measuring hysteresis loop of three differences magnetic materials. The obtained results were compared with those of the vibrating sample magnetometer (VSM). The performance of constructed R-VSM is quite well and can be used as a tool to characterize magnetic properties of low-magnetic materials.

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