Department of Physics

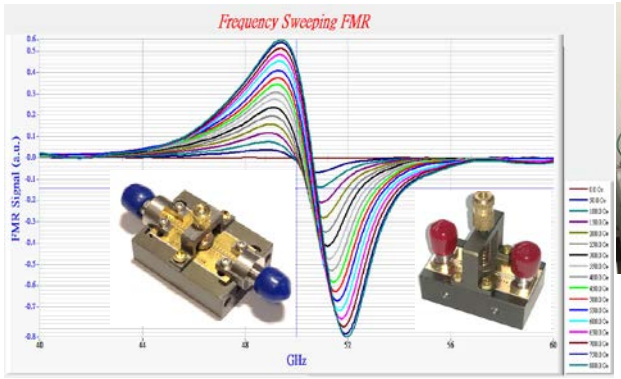
Spin Dynamics & Instrumentation Physics

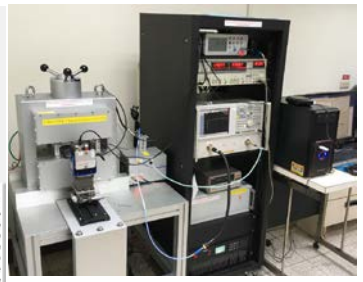
I am interested in using magnetic resonance to probe the dynamic behavior of spintronic materials. To this end, a very sensitive ferromagnetic resonance (FMR) spectrometer was built, from which we can determine not only the static parameters of spin materials, but also the dynamic information, such as damping constant, which indicates how long the precession of the magnetic moment will die way.

Systems of physical deposition systems, such as sputtering, thermal evaporation and pulse laser deposition, electrical plating were built for sample fabrication. In that ultra high vacuum techniques are needed.

In addition to FMR spectrometers, the laboratory has also established characterization systems such as VSM, magnetic transmission and optical systems. All these need the techniques of low level signal process, automation, sensor applications, programming, etc.

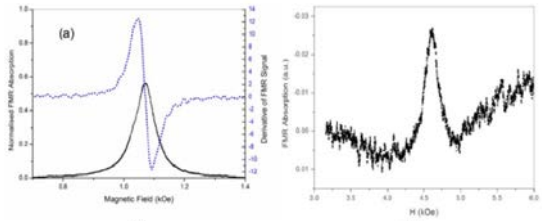
FMR of BaM @ frequency up to 65 GHz
Grounded coplanar waveguides used in this study are also shown





Combined system of VNA-FMR and VSM

(a) FMR of 5nm Py, and (b) of 1.6nm CoFeB



UHV PVD Combined system:
dual beam PLD & thermal evaporation

Publications

- "Instrumentation for Ferromagnetic Resonance", C.K. Lo, Book chapter in Ferromagnetic Resonance - Theory and Applications, InTech, 2013
- C.K. Lo, W.C. Lai, J.C. Cheng, Rev. Sci. Instruments, 82, 086114 (2011)
- Edge effect on coercive field of GMR sensors with meander line structure Chan, Y. H., Chen, M. J., Chiang, J. J., Liao, I. C., Wu, T. H., Lee, C. M., Peng, W. Y., Chen, J. Y., Lai, J. Y., Lo, C. K. & Wei, Z. H., 2014 Jan, In : IEEE Transactions on Magnetics. 50, 1, 2273453. 2014
- Ferromagnetic resonance properties of Fe81-xNi xGa19/Si(1 0 0) and Fe81-yNi yGa19/glass films, Liu, C. C., Jen, S. U., Juang, J. Y. & Lo, C-K., 2013 Jun 15, In : Journal of Alloys and Compounds. 562, p. 111-115 5 p. 2013

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Background:
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