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**Development of a scanning probe microscope for localized ferromagnetic resonance measurements** CHRISTIAN LONG, NAOYUKI TAKE-TOSHI, University of Maryland, HAITAO YANG, Intematix Corporation, ICHIRO TAKEUCHI, University of Maryland — We present an update on our research into the development of a scanning probe microscope capable of performing localized ferromagnetic resonance measurements. The system is based on near-field microwave microscopy using a resonant microwave cavity. Using near-field microwave microscopy allows us to produce a GHz frequency magnetic field which is confined to the region around the probe tip. By recording the change in the transmission coefficient of the resonator ( $S_{12}$ ) as a function of applied DC magnetic field, we measure the absorption of RF energy by the sample. The resulting ferromagnetic resonance spectrum allows us to map the magnetic properties of the material under the probe tip. The possibility to perform localized ferromagnetic resonance measurements using a scanning probe geometry promises to yield new insight into the properties of magnetic thin films.

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