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Magnetization damping in epitaxial CrO₂ (110) HWACHOL LEE, KRISHNA CHETRY, CLAUDIA K.A. MEWES, ARUNAVA GUPTA, TIM MEWES, Center for Materials for Information Technology — Epitaxial CrO₂ thin films were grown on TiO₂ (110) substrates using chemical vapor deposition (CVD) using a CrO₃ precursor as described elsewhere [1]. In-plane angular dependent ferromagnetic resonance (FMR) measurements confirm a uniaxial in-plane anisotropy with the easy axis along the c-axis. Frequency dependent FMR measurements were carried out over a frequency range from 7-60 GHz along the easy axis of the film. The resonance field dependence on the microwave frequency is well described by the Kittel formula, enabling the determination of M_{eff} and γ of the films. The ferromagnetic resonance linewidth depends only weakly on the microwave frequency: the linewidth has a minimum around 20 GHz and increasing linearly for larger frequencies with a very small slope. Based on this we estimate the Gilbert damping constant (intrinsic) to be of the order 10^{-4} , i.e. very small. The main contribution to the magnetization relaxation is extrinsic in nature and can therefore be further optimized. References: [1]: X. W. Li, A. Gupta, and G. Xiao, Appl. Phys. Lett. **75**, 713 (1999).

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