

## Hall Effect on CoZrGd films

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The Hall effect in amorphous films which has soft magnetic properties were studied in several works[1-4]. It was found that the spontaneous Hall coefficient of amorphous RE-TM films(RE : Rare Earth metal, TM : 3d transition metal) is anomalously larger than that of the other soft magnetic materials. The other particularity of amorphous RE-TM films which has ferrimagnetic structure, is that the sign of Hall voltage( $V_{Hall}$ ) is changed to opposite near the compensation temperature( $T_{comp}$ ).

The Hall properties of amorphous CoZrGd films(15 at.% < Gd < 28 at.%) was compared with its magnetic properties, since the temperature dependency of saturation magnetization is easily controlled by changing Co and Gd composition ratio. By considering the sub-lattice magnetization  $M_{Gd}$  and  $M_{Co}$ , the calculated spontaneous Hall resistivity increases slightly from  $1.8 \times 10^{-12}$  W-m/G to  $3 \times 10^{-12}$  W-m/G as Gd concentration increased. It is revealed that almost all of electron scattering is originated from skew scattering. An anomalous over-fluctuation of  $\rho_H$  most marked around  $T_{comp}$  is also reported.

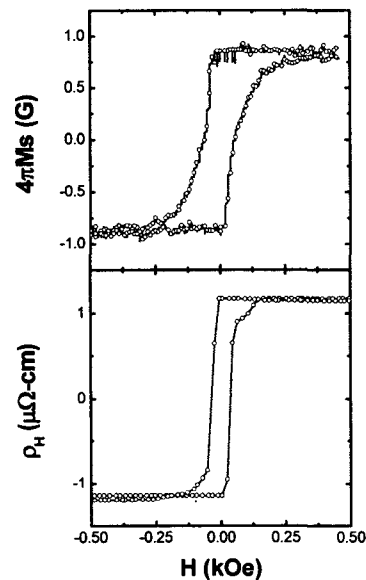


Fig. 1. Magnetic and Hall hysteresis loop of Gd 22 at.% film at room temperature.

### References

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