

# AFM-FM phase transition in ultrathin FeRh and in FeRh/FM (Fe, Co) bilayers on W(110) substrate

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Low dimensional FeRh films exhibiting AFM-FM transition are promising materials for the heat assisted storage media applications [1]. Ultrathin FeRh layers with the thickness of 33, 50 and 100Å were grown on the W(110) substrate. The magnetic properties were studied in-situ using longitudinal magneto-optical Kerr effect. The AFM-FM phase transition was observed for all the investigated thicknesses, but with clearly different temperature characteristics. The transition temperature decreases with decreasing thickness when heating from the AFM to FM phase while, on its cooling branch transition becomes smeared and wider for the thinnest film as compared to the thicker ones. In addition, we show that deposition of 5 Å Co capping layers on FeRh surface shifts the transition temperature downward relative to the uncoated FeRh. Finally, the in-plane anisotropy of the cobalt film can be programmed with use of AFM-FM phase transition in FeRh.

## References:

[1] J. Cao, N.T. Nam, S. Inoue, H.Y.Y. Ko, N.N. Phuoc, and T. Suzuki, J. Appl. Phys. 103, 07F501 (2008).