

Fast Precessional Motion of Co/Pd Multilayer Systems Induced by Heat Treatment

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Co/Pd multilayer systems have been investigated with much attention for a long time due to the high and easily controllable perpendicular magnetic anisotropy. Two [Pd(1)/Co(0.4 nm)]₅ multilayer systems – one is as-deposit, and the other is annealed at 350°C – are studied with an all-optical approach. A two-color optical pump probe setup using 30 fs laser pulse at 82 MHz repetition rate is used to measure the time-resolved magneto-optical Kerr signal. It turns out the heat treatment enhances the perpendicular magnetic anisotropy, and leads to faster magnetization precession. The frequency reaches 30 GHz in the annealed sample, which is a factor of 2 larger compared to the as-deposit film.

Key words: Co/Pd, Multilayer, ultrafast, laser-induced, precession