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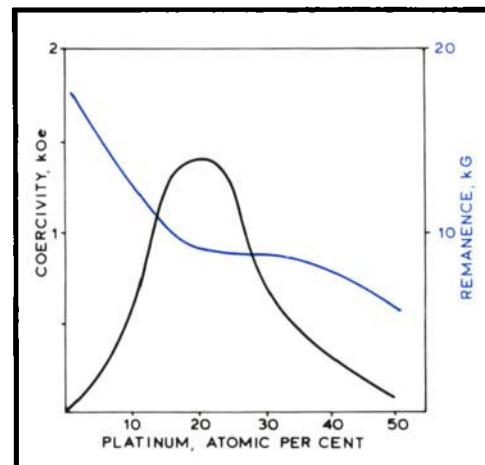
Sputtered Cobalt-Platinum Thin Magnetic Films

It has long been known that certain cobalt-platinum alloys possess useful magnetic properties which can, to some extent, be selected by choosing an appropriate alloy composition and varying the heat treatment given. In the annealed condition these alloys can be machined or rolled and drawn to size without difficulty. As a result they are used for a number of very specialised applications where worthwhile economic advantage can result from harnessing the powerful magnetic properties of these intrinsically valuable alloys.

A thin magnetic film possessing high coercivity and remanence and with high hysteresis loop squareness could find application as a high density magnetic recording medium, and in many magnetic devices. However, in contrast to bulk cobalt-platinum, the coercivity of electrodeposited cobalt-platinum films is too low to be useful for such purposes. Now Masahiro Kitada and Noboru Shimizu of the Central Research Laboratory of Hitachi Limited have reported on the development of r.f. sputtered cobalt-platinum thin films which exhibit good magnetic properties (*J. Appl. Phys.*, 1983, **54**, (12), 7089-7094).

The films were prepared using a conventional r.f. sputtering system in which the target was either a sintered cobalt-platinum disc or a cobalt disc upon which a calculated amount of platinum was placed, so enabling the composition of the target to be changed readily.

The magnetic properties and microstructure



of the sputtered films, and the influence of sputtering conditions upon these were studied. High coercivity cobalt-platinum films were obtained with compositions in the range 5-35 atomic per cent platinum. A maximum coercivity of 1800 Oe was obtained for a cobalt-20 atomic per cent platinum alloy, which had a remanence of about 9500 G.

The coercivity and remanence of alloy films with a thickness of 800Å are shown here in the Figure; vacuum pressure prior to introduction of the argon sputtering gas and argon pressure during sputtering were 2×10^{-6} and 5×10^{-3} Torr, respectively.