

HYDROGENATED CARBON THIN FILMS

Abstract

The embodiments of the invention are one, two or three layer protective hydrogenated carbon (C:H) thin film coatings on a disk with hydrogenation levels that are higher at the surface and decrease from the surface downward toward the substrate (11). The hydrogen content of the various layers or zones of the overcoat are optimized to use the varying properties of C:H films such as good adhesion obtained with a low level of hydrogen, the high hardness of an intermediate level of hydrogen content and the low surface energy of a high hydrogen content film. In one embodiment the disk is coated with a sputtered C:H thin film (15) with a gradient in the hydrogen concentration. A second embodiment of the invention uses two layers in which the hydrogen content of bottom layer is lower than the surface layer. A third embodiment of the invention uses a three layer construction of the thin-film.

Figure 2A