recording layers each have a granular structure that has first magnetic crystal grains and a first non-magnetic portion surrounding the first magnetic crystal grains and formed of a material having carbon as the main component. The second magnetic recording layers each have a granular structure that has second magnetic crystal grains and a second non-magnetic portion surrounding the second magnetic crystal grains and formed of a material different from that of the first non-magnetic portion.

[0018] Fig. 1 shows a configuration example of the magnetic recording medium of the present invention that includes a magnetic recording layer 50 configured by two first magnetic recording layers 51 (a, b) and one second magnetic recording layer 52. In this configuration example, the magnetic recording medium of the present invention has a non-magnetic substrate 10, ~~a non-magnetic substrate 10,~~ an adhesion layer 20, an underlayer 30, a seed layer 40, the magnetic recording layer 50, and a protective layer 60. The adhesion layer 20, the underlayer 30, the seed layer 40, and the protective layer 60 illustrated in the configuration example in Fig. 1 may be provided optionally. The magnetic recording medium of the present invention may further include a heat sink layer, a soft magnetic underlayer, an intermediate layer and the like between the non-magnetic substrate 10 and the magnetic recording layer 50. As shown in Fig. 2, the magnetic recording medium of the present invention may include a

In case of providing a soft magnetic underlayer, then the underlayer 30 needs to be non-magnetic in order to prevent the magnetic impacts on the soft magnetic underlayer. Examples of the material used for forming the underlayer 30 include metals such as Cr and Ta, a NiW alloy, and Cr-based alloys such as CrTi, CrZr, CrTa, and CrW. The underlayer 30 can be formed using a sputtering method or any method known in the art.

[0024] The seed layer 40 functions to ensure adhesion between the magnetic recording layer 50 and a layer therebelow such as the underlayer 30, and to control the grain diameter and crystal orientations of the first magnetic crystal grains and the second magnetic crystal grains of the magnetic recording layer 50 which is the upper layer. It is preferred that the seed layer 40 be non-magnetic. In addition, in case of using the magnetic recording medium of the present invention in a heat-assisted magnetic recording system, the seed layer 40 preferably functions as a thermal barrier to control the temperature increase and distribution of the magnetic recording layer 50. In order to control the temperature increase and distribution of the magnetic recording layer 50, the seed layer 40 preferably functions both to rapidly increase the temperature of the magnetic recording layer 50 when heating up the magnetic recording layer ~~40~~50 at the time of heat-assisted recording and to guide the heat of the magnetic recording layer 50 to the lower layers such as the underlayer 30 in a depth direction prior to