FIG. 1A

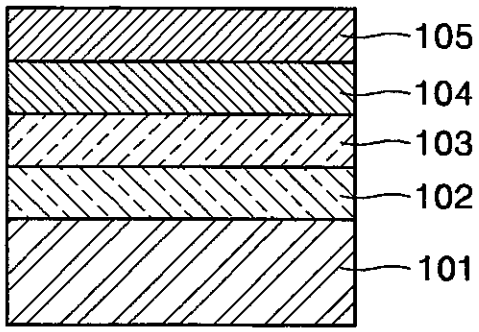


FIG. 1B

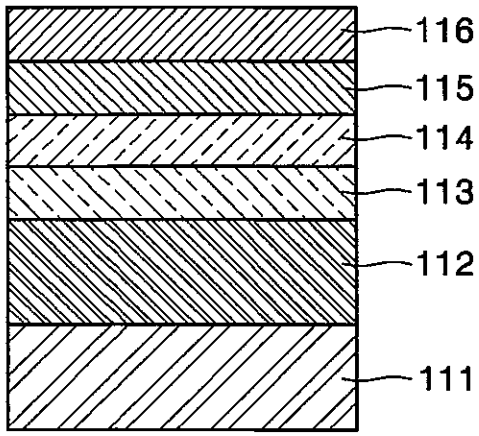


FIG. 2

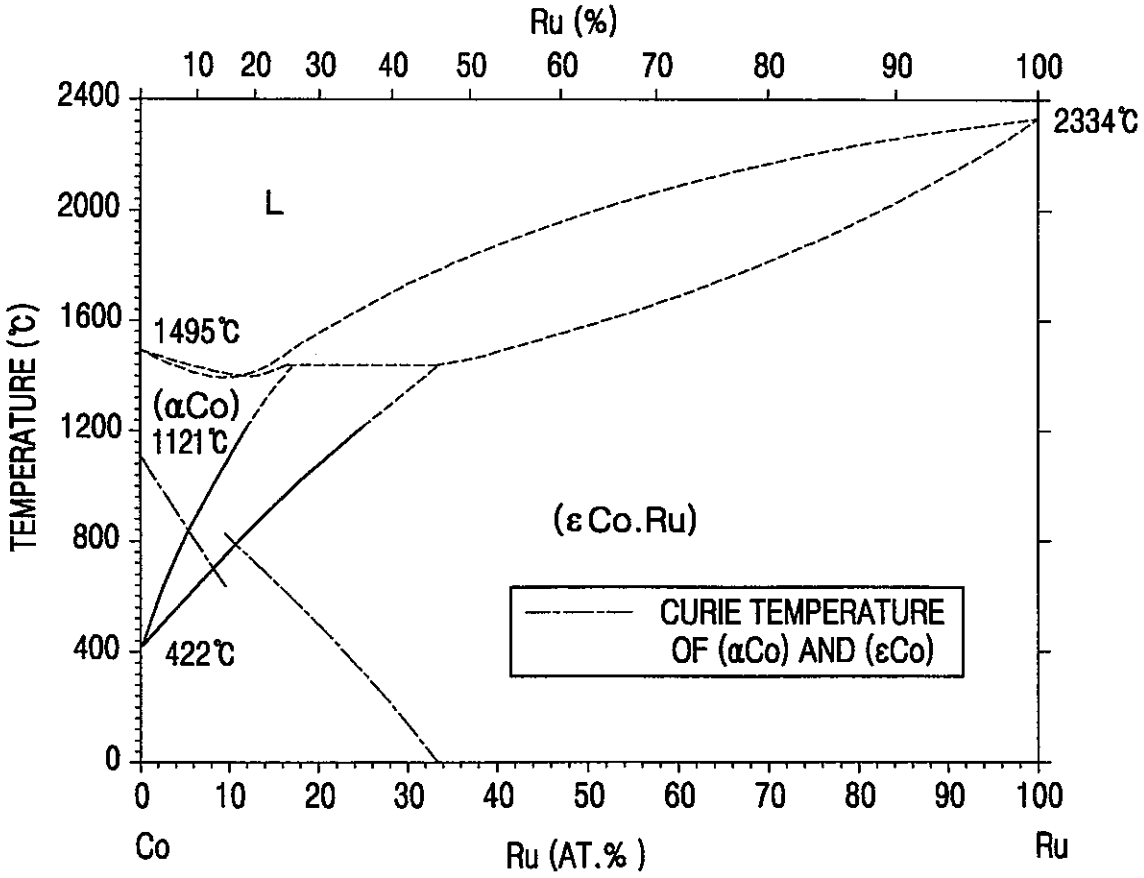

Ru (%)
10 20 30 40 50 60 70 80 90 100
2400
2000
1600
1200
800
400
0
TEMPERATURE (℃)
L
1495℃
(αCo)
1121℃
(εCo.Ru)
422℃
2334℃
CURIE TEMPERATURE
OF (αCo) AND (εCo)
0 10 20 30 40 50 60 70 80 90 100
Co
Ru (AT.%)
Ru

FIG. 3

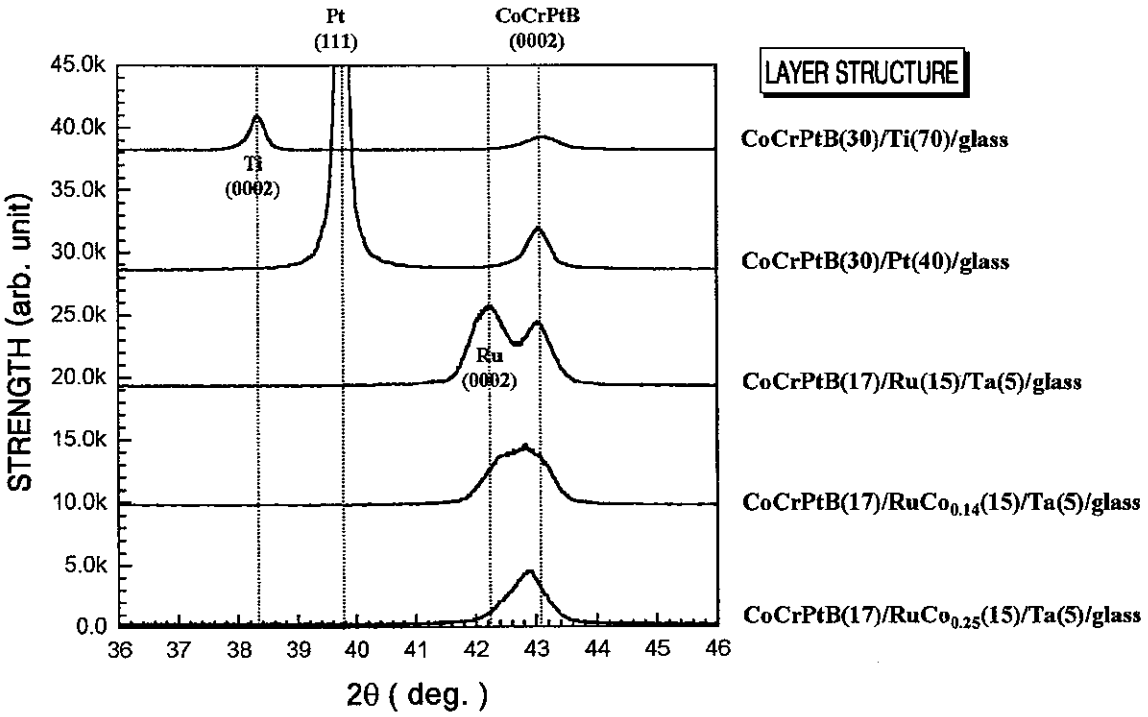

Pt
(111)
CoCrPtB
(0002)
Ti
(0002)
Ru
(0002)
LAYER STRUCTURE
CoCrPtB(30)/Ti(70)/glass
CoCrPtB(30)/Pt(40)/glass
CoCrPtB(17)/Ru(15)/Ta(5)/glass
CoCrPtB(17)/RuCo0.14(15)/Ta(5)/glass
CoCrPtB(17)/RuCo0.25(15)/Ta(5)/glass
STRENGTH (arb. unit)
45.0k
40.0k
35.0k
30.0k
25.0k
20.0k
15.0k
10.0k
5.0k
0.0
36
37
38
39
40
41
42
43
44
45
46
2θ (deg.)

FIG. 4A

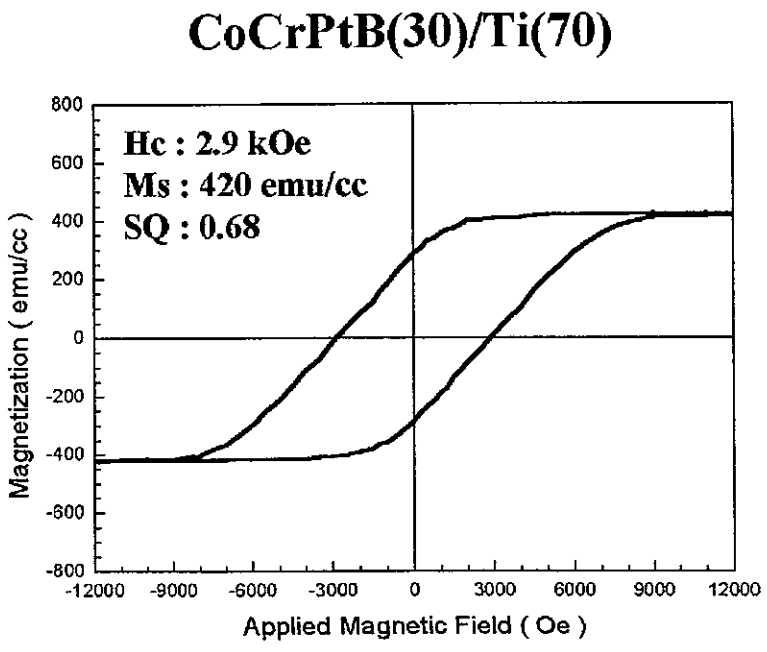

CoCrPtB(30)/Ti(70)
Hc : 2.9 kOe
Ms : 420 emu/cc
SQ : 0.68
Magnetization (emu/cc)
800
600
400
200
0
-200
-400
-600
-800
-12000
-9000
-6000
-3000
0
3000
6000
9000
12000
Applied Magnetic Field (Oe)

FIG. 4B

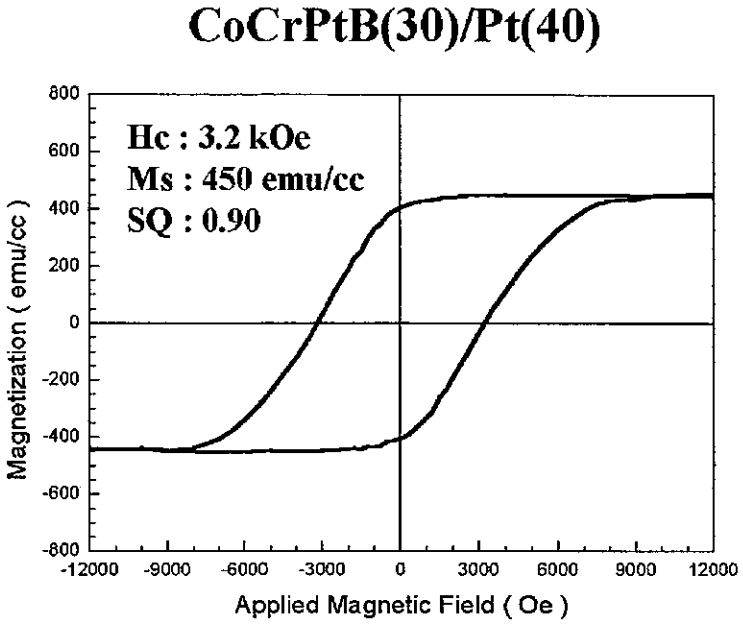

CoCrPtB(30)/Pt(40)
Hc : 3.2 kOe
Ms : 450 emu/cc
SQ : 0.90
Magnetization (emu/cc)
Applied Magnetic Field (Oe)
800
600
400
200
0
-200
-400
-600
-800
-12000
-9000
-6000
-3000
0
3000
6000
9000
12000

FIG. 4C

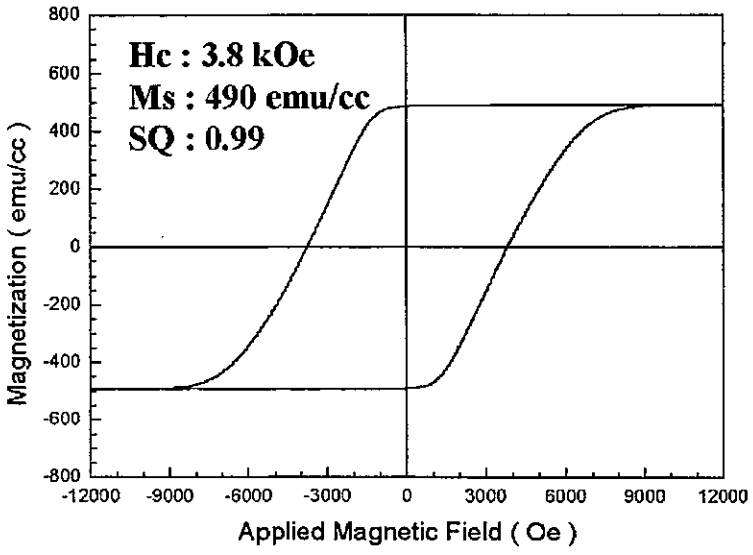

CoCrPtB(17)/Ru(15)/Ta(5)
Hc : 3.8 kOe
Ms : 490 emu/cc
SQ : 0.99
Magnetization (emu/cc)
Applied Magnetic Field (Oe)
800
600
400
200
0
-200
-400
-600
-800
-12000
-9000
-6000
-3000
0
3000
6000
9000
12000

FIG. 4D

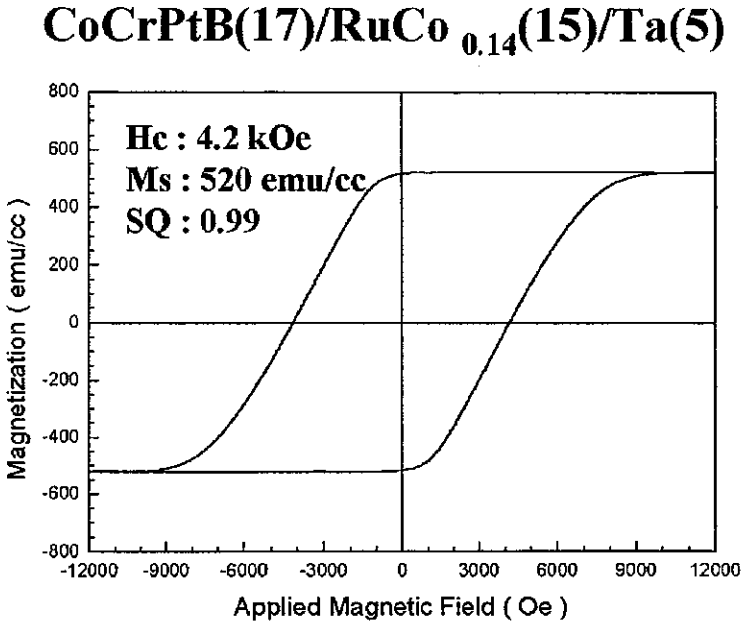

CoCrPtB(17)/RuCo 0.14(15)/Ta(5)
Hc : 4.2 kOe
Ms : 520 emu/cc
SQ : 0.99
Magnetization (emu/cc)
800
600
400
200
0
-200
-400
-600
-800
-12000
-9000
-6000
-3000
0
3000
6000
9000
12000
Applied Magnetic Field (Oe)

FIG. 4E

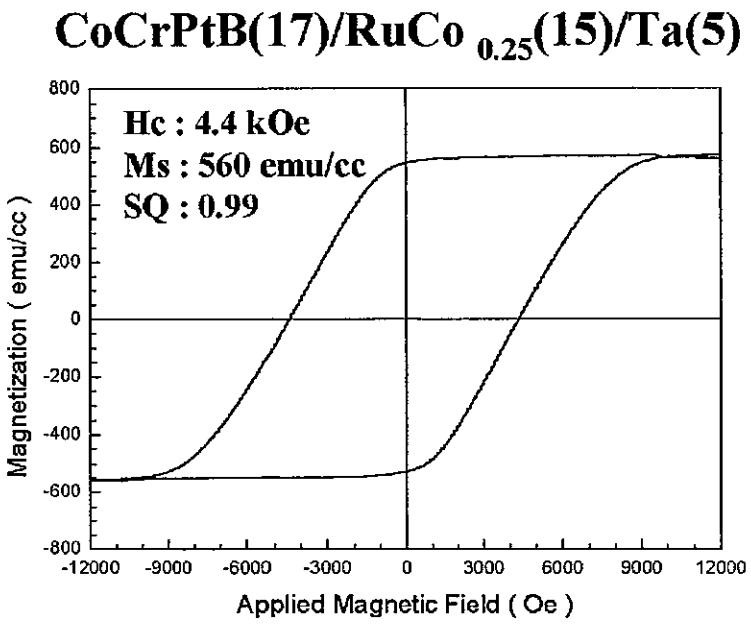

CoCrPtB(17)/RuCo 0.25(15)/Ta(5)
Hc : 4.4 kOe
Ms : 560 emu/cc
SQ : 0.99
Magnetization (emu/cc)
800
600
400
200
0
-200
-400
-600
-800
-12000
-9000
-6000
-3000
0
3000
6000
9000
12000
Applied Magnetic Field (Oe)

FIG. 5A

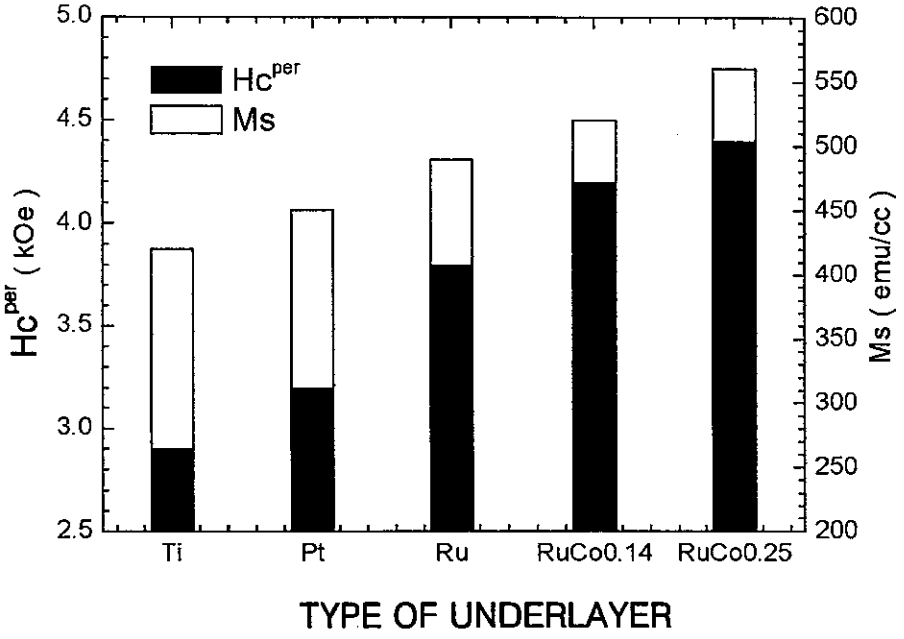
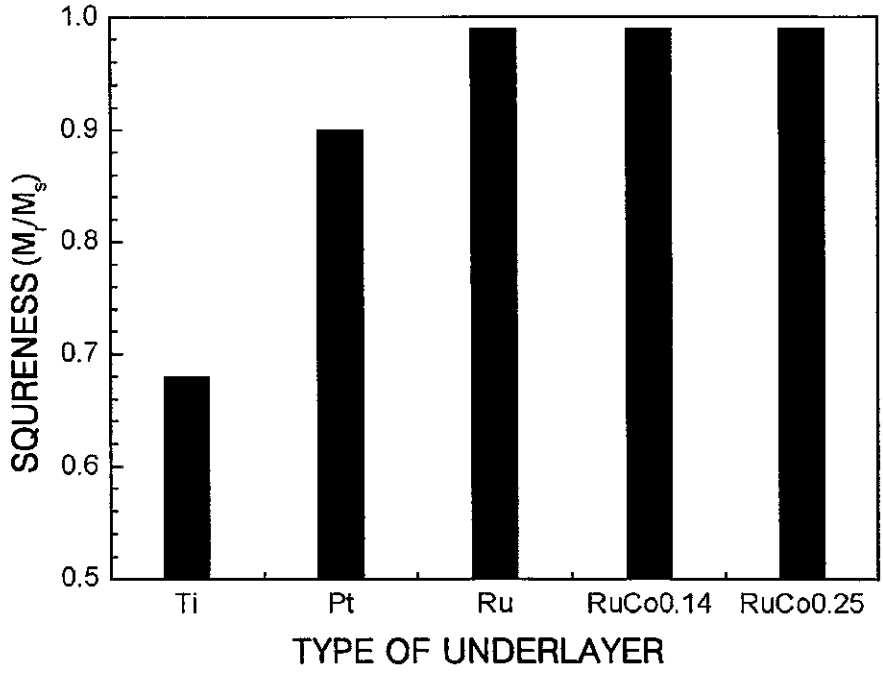

5.0
4.5
4.0
3.5
3.0
2.5
Hc^per (kOe)
600
550
500
450
400
350
300
250
200
Ms (emu/cc)
Hc^per
Ms
Ti
Pt
Ru
RuCo0.14
RuCo0.25
TYPE OF UNDERLAYER

FIG. 5B


1.0
0.9
0.8
0.7
0.6
0.5
SQURENESS (M_r/M_s)
Ti
Pt
Ru
RuCo0.14
RuCo0.25
TYPE OF UNDERLAYER