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(24) 2001 08 20

(21) 10 - 1996 - 0063432 (65) 1997 - 0050424
(22) 1996 12 10 (43) 1997 07 29

(30) 321658/1995 1995 12 11 (JP)

(73) 가 가

1 6 7

(72) 가 4 - 3 - 2
가 가 4 - 3 - 2

(74) :

(54)

, / 가
 , ; 1 ; 1
 ; 10~30nm ;
 2 ; 2
 .

1

[]

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1

[]

(phase change optical recording medium)

가 ()

가

가

가 가

, 12mm

, ZnS · SiO₂ 1

GeSbTe

가

, ZnS · SiO₂ 2

, Al

가

가

(mark edge)

, ZnS , Al , Si , MgF₂ AlF₃ , SiO₂ , AlO₃ , ZrO₂ TiO₂
, ZnS , ZnS · SiO₂ ,

가

가

6 - 139615

Al₂O₃, GeO₂, SiO₂, Ta₂O₅,

Y₂O₃,

4 - 143937

ZnS

7 - 307036

ZnS

2

3

(1)

(2)

가

(

가

,

"

X

FWHM(Full Width Half Maximum)

(3)

가

6 - 139615

가

4 - 143937

50nm

ZnS

가

7 - 307036

ZnS (SiO₂ 4 - 74785). 4 - 74785 ZnS , ZnS SiO₂ 가 , SiO₂ 가가 , 7 - 307036 , ZnS GeSbTe . SiO₂ 가 , , ZnS • SiO₂ , SiO₂ 가 GeSbTe , ZnS • SiO₂ 가 SiO₂ , , 가 , , 1 , 2 , 1, 2 , 10~30nm , 30nm (ZnS) (ZnS • SiO₂) (laminate) , ZnS 가 30nm , ZnS 가 30nm , Al , 10~30nm , 10nm , 30nm , 30nm , 30nm , Ge, Sb Te가 Ge, Sb Te 90% , 5~40nm, 20~30nm , 5nm , 40nm

Ge, Sb Te 10~30nm

ZnS PbS , ZnS가 10~30nm 가 10nm , 가 30nm ,

1.8~2.6 " X - FWHM 2

5 , SiO₂, GeO₂, SnO₂, In₂O₃ , Al SiN

10~30 % ZnS, ZnSe, ZnTe, PbS PbTe 가

가 ZnS , 가 , 가 ,

가 SiO₂ , 가 ,

가 ,

가 ZnS 가 SiO₂ 12~35 %가 , 20 %가 가 SiO₂ 35 %

12 % , 가 , 가 , SiO₂ 20 %

가 ,

1 50~250nm, 2 5~100nm가 1 50nm

nm 1 250

5nm , 2

% " " 90

가 , , C/N ,

가 (, 가 ,

Cr, Ta, Ti, Au , Cr , Al Cr

Al Cr 90 %

가 , Al 1~5

% Cr, 3 %가 가 ,

가 250nm 30~250nm가 가 30nm , ,

가 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

[]

1 5, 1 3
(1)/ 1 (2)/ (3)/ (4)/ 2 (5)/ (6)/
(7) 1 (4)
(1) 1.5 가 ()
LF - 7300JI 130nm
, 1.2 μ m 0.6 μ m 가
(3) 25nm (2) 170nm ZnS · SiO₂ (ZnS:SiO₂ = 80:20)
(5) 20nm Ge₂Sb₂Te₅ (4) ZnS 2
100nm AlCr (Al:Cr = 97:3) ZnS · SiO₂ (ZnS:SiO₂ = 80:20) (6)
(3) (ANELVA Co.) (1) ILC 3102 8
(3) 0~35

2400rpm 780nm LF - 7300J1
20mW 100mW 200,000 200,000
1.5mW 가 25500 가
32mm 가

1.5T 가 VF01 ,
 . VF01 (prepit)
 (ID) . (VF01) 가 가

() () .

,

가 가 .

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() . , ,

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가 , ,

가 , 가 (

) .

" " , 가 , ,
 μs 가 200,000 (VF01)
 , 가 ,
 , 15 μs , VFO

0	,	200,000	가	.	가	1.5T	4T	200,000
		가		1.5T		.	1.5T	4T
	(2, 7)				가	가		
	.	" T"		.				

1 200,000 가

1 5 , , 15 μ s , 9/10⁻⁶ (9 \times 10⁻⁶)

1 3 , 15 μ s , 8/10⁵ .

디스크 번호	접착층 두께(nm)	2x 10번 후의 평가		재생된 파동의 변형
		피크 이동(μ s)	비트 에리올	
비교실시예 1	--	20	$8/10^5$	유
비교실시예 2	5	18	$8/10^5$	유
실시예 1	20	4	$4/10^6$	무
실시예 2	10	10	$8/10^6$	무
실시예 3	15	7	$6/10^6$	무
실시예 4	25	10	$7/10^6$	무
실시예 5	30	13	$9/10^6$	무
비교실시예 3	35	20	$8/10^5$	유

1 가 10nm , 가 10~30nm .
가 , 가
가 30nm , 가
가 , 가

[6]

(1)/ 1 (2)/ (3)/ (4)/ 2 (5)/ (6)/
(7) PbS 1 5
20nm
가 1 5
7 μ s 8/10⁶
ZnS PbS 가
, ZnS가 PbS

[7]

(1)/ 1 (2)/ (3)/ (4)/ 2 (5)/ (6)/
 (7) 1 1, 2 ZnS · S
 iN . ZnS · SiN Ar ZnS ·
 SiN(ZnS:Si₃N₄ =70:30) .
 가 1 5 .
 , 6μs , 6/10⁶ .
 , ZnS · SiN ZnS · SiO₂ .

[4]

(1)/ 1 (2)/ (3)/ (4)/ 2 (5)/ (6)/
(7) 1 150nm
ZnS , AlCr 80nm 가
가 1 5 .
, 17 μ s , 1/10⁴ .
1 ZnS ,

[5]

(1)/ 1 (2)/ (3)/ (4)/ 2 (5)/ (6)/

(7) 18nm

SiO₂ , AlCr 80nm SiO₂ SiO₂ SiO₂ SiO₂ SiO₂ A

r 가 .

1.50

가 1 5 .

16μs , 1/10⁴ .

2 SiO ZnS AlCr 2

(1)/ 1 (2)/ (3)/ (4)/ 2 (5)/ (6)/
 (7) ZnS 1, 2 120nm 20nm SiN 50nm
 1 GeSbTe , 20nm 1 A
 , 80nm SiN Ar Si₃N₄
 SiN SiN 3:4 2.15

가 1 5

25 μ s

2/10⁴

SnS

1

[7]

(1)/ 1 (2)/ (3)/ (4)/ 2 (5)/ (6)/
 (7) SiO₂ 1 1, 2 ZnS · Y₂O₃ ,
 ZnS · Y₂O₃ (ZnS:Y₂O₃ = 90:10) Ar 가 ZnS · Y₂O₃

가 1 5

20 μ s

7/10⁵

ZnS

GeSbTe

SiO₂

[8]

(1)/ 1 (20/ (3)/ (4)/ 2 (5)/ (6)/
 (7) Al₂O₃ , 25nm 1, 2 120nm 3
 ZnS , 90nm ArCr GeSbTe 15nm
 Al₂O₃ Ar O₂ (O₂ 1%) 가 Al₂O₃

가 1 5

, 15 μ s

8/10⁵

AlCr

()

(57)

1.

, / 가
 , ; 1 ; 1
 ; 10~30nm ;
 2 ; 2
 ; 1, 2 12 35 % SiO_2 가 가
 ZnS , 1 50 250nm 가 , 2 5 100nm
 , ZnS PbS .

2.

1 , Ge, Sb Te , 5~40nm
 .

3.

2 , Al Cr , 30~250nm
 .

4.

1 , Al Cr , 30~250nm
 .

5.

, / 가
 , ; 1 ; 1
 ; , 10~30nm ; 1
 ; 2 ; 2 PbS
 ;
 .

6.

5 , Ge, Sb Te , 5~40nm
 .

7.

6 , Al Cr , 30~250nm
 .

8.

5

Al Cr , 30~250nm

1

