

38. L A magnetic device, characterized in that:

$\text{Co}_2\text{Fe}_x\text{Cr}_{1-x}\text{Al}$ ($0 \leq x \leq 1$) magnetic thin film having either of structures L2₁, B2, and A2 is formed on a substrate.

39. The magnetic device as set forth in claim 38, characterized in that a free layer uses said tunnel magnetoresistance effect device or giant magnetoresistance effect device consisting of said $\text{Co}_2\text{Fe}_x\text{Cr}_{1-x}\text{Al}$ ($0 \leq x \leq 1$) magnetic thin film.

40. The magnetic device as set forth in claim 38 or claim 39, characterized in that it uses said tunnel magnetoresistance effect device or giant magnetoresistance effect device manufactured without heating a substrate.

41. The magnetic device as set forth in claim 38 or claim 39, characterized in that it uses said tunnel magnetoresistance effect device or giant magnetoresistance effect device in which a buffer layer is provided between said substrate and said $\text{Co}_2\text{Fe}_x\text{Cr}_{1-x}\text{Al}$ ($0 \leq x \leq 1$) thin film.

42. The magnetic device as set forth in claim 38 or claim 39, characterized in that it uses said tunnel magnetoresistance effect device or giant magnetoresistance effect device in which said substrate is either thermally oxidized Si, glass, MgO single crystal, GaAs single crystal, or Al_2O_3 single crystal.

43. The magnetic device as set forth in claim 41, characterized in that it uses said tunnel magnetoresistance effect device or giant magnetoresistance effect device in which said buffer layer is made of at least either one of Al, Cu, Cr, Fe, Nb, Ni, Ta, and NiFe.

44. A magnetic head, characterized in that:

$\text{Co}_2\text{Fe}_x\text{Cr}_{1-x}\text{Al}$ (where $0 \leq x \leq 1$) magnetic thin film having either of structures L2₁, B2, and A2 is formed on a substrate.

45. The magnetic head as set forth in claim 44, characterized in that it uses said tunnel magnetoresistance effect device or giant magnetoresistance effect device in which the free layer is said $\text{Co}_2\text{Fe}_x\text{Cr}_{1-x}\text{Al}$ (where $0 \leq x \leq 1$) magnetic thin film.

46. The magnetic head as set forth in claim 44 or claim 45, characterized in that it uses said tunnel magnetoresistance effect device or giant magnetoresistance effect device manufactured without heating said substrate.

47. The magnetic head as set forth in claim 44 or claim 45, characterized in that it uses said tunnel magnetoresistance effect device or giant magnetoresistance effect device in which a buffer layer is provided between said substrate and said $\text{Co}_2\text{Fe}_x\text{Cr}_{1-x}\text{Al}$ (where $0 \leq x \leq 1$) thin film.

48. The magnetic head as set forth in claim 44 or claim 45, characterized in that it uses said tunnel magnetoresistance effect device or giant magnetoresistance effect device in which said substrate is either thermally oxidized Si, glass, MgO single crystal, GaAs single crystal, or Al_2O_3 single crystal.

49. The magnetic head as set forth in claim 47, characterized in that it uses said tunnel magnetoresistance effect device or giant magnetoresistance effect device in which said buffer layer is made of at least either one of Al, Cu, Cr, Fe, Nb, Ni, Ta, and NiFe.

50. The magnetic recording apparatus, characterized in that it uses said magnetic head as set forth in claim 44 or claim 45.

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