

ABSTRACT OF THE DISCLOSURE

A data storage medium comprising a substrate and a data storage layer formed on the substrate. The data storage layer comprises a fixed number of atomic layers of a magnetic material which provide the data storage layer with a magnetic anisotropy perpendicular to a surface of the data storage layer. A data magnetic field is created in the data storage layer. The data magnetic field is polarized either in a first direction corresponding to a first data value or in a second direction corresponding to a second data value. Data is stored in the data storage layer by providing a spin-polarized electron having an electron magnetic field with a direction of polarization corresponding to one of the first and the second data values, and directing the spin-polarized electron at the data magnetic field to impart the direction of polarization of the electron magnetic field to the data magnetic field. Data is read from the data storage layer by directing the spin-polarized electron at the data magnetic field and detecting a deflection or attraction of the spin-polarized electron by the data magnetic field. Alternatively, data is read from the data storage layer by directing the spin-polarized electron at the data magnetic field so that the magnetic medium produces a secondary electron and then detecting certain characteristics of the secondary electron.

(FIGURE NO. 1)

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