APPENDIX A

A list of χ values for elements that may be used as ferromagnetic layers and conductive spacers is provided below:

Element	Polycrystalline χ (eV).	Bulk Crystal Structure
Au	2.22	FCC
Fe	1.90	BCC
Cu	1.91	FCC
Ag	1.89	FCC
Pt	2.34	FCC
Pd	2.32	FCC
Ir	2.32	FCC
Rh	2.04	FCC
Co	2.05	FCC in thin films
Ni	2.13	FCC
Mn	1.65	Complex
Cr	1.83	BCC
Ti	1.76	
V	1.74	BCC
Ru	1.92	CPH close packed hexagonal
Sn	1.79	Complex
Ta	1.73	BCC
Nb	1.75	BCC
Zr	1.63	BCC CPH
Hf	1.57	CPH
Y	1.21	CPH
La	1.39	FCC CPH
Rare earth elements	~1.21	Complex CPH FCC BCC
C	~2.52	Various forms
N	~3.01	Gaseous
Al	~1.72	FCC
Ge	~2.00	
Si	~1.96	
Bi	1.71	
As	1.50	

What is claimed is:

1. A method of optimizing the interfacial properties of a magnetoresistive sensor comprising the steps of:

selecting first and second ferromagnetic layers, each having similar crystallographic orientations, said first ferromagnetic layer having a first electronegativity; and

selecting an electrically conductive spacer disposed between said ferromagnetic layers and having a crystallographic orientation similar to said ferromagnetic crystallographic orientations and having a second electronegativity

so that an absolute value of a difference between said first and second electronegativities is minimized.

2. The method as in claim 1, wherein, each of said selecting steps includes selecting a single crystal material for said ferromagnetic layers and said electrically conductive spacer.

3. The method as in claim 1,

wherein said step of selecting said ferromagnetic layers includes selecting a ferromagnetic layer material with a face centered cubic structure; and

wherein said step of selecting said conductive spacer includes selecting a spacer material with a face centered cubic structure and wherein said absolute value is equal to or less than approximately 0.14 eV.

4. The method as in claim 1,

wherein said step of selecting said ferromagnetic layers includes selecting a ferromagnetic layer material with a body centered cubic structure; and

wherein said step of selecting said conductive spacer includes layers comprise single crystal structures and said electrically conductive spacer comprises a single crystal.

5. A method of optimizing the interfacial properties of a magnetoresistive sensor comprising the steps of:

selecting first and second ferromagnetic layers, each having random crystallographic orientations, said first ferromagnetic layer having a first electronegativity; and

selecting an electrically conductive spacer disposed between said ferromagnetic layers and having a random crystallographic orientation and having a second electronegativity so that an absolute value of a difference between said first and second electronegativities is minimized.

6. The method as in claim 5,

wherein said step of selecting said ferromagnetic layers includes selecting ferromagnetic layer materials with face centered cubic structures; and

wherein said step of selecting said conductive spacer includes selecting a spacer material with a face centered cubic structure and

wherein said absolute value is less than approximately 0.12 eV.

7. The method as in claim 5,

wherein said step of selecting said ferromagnetic layers includes selecting ferromagnetic layer materials with body centered cubic structures; and

wherein said step of selecting said conductive spacer includes selecting a spacer material with a body centered cubic structure

wherein said absolute value is less than approximately 0.07 eV.

8. A magnetoresistive sensor disposed on a substrate comprising:

first and second ferromagnetic layers, each having similar crystallographic orientations, said first ferromagnetic layer having a first electronegativity; and

an electrically conductive spacer interposed between said ferromagnetic layers and having a crystallographic orientation similar to said ferromagnetic crystallographic orientations and having a second electronegativity so that an absolute value of a difference between said first and second electronegativities is minimized.

9. The sensor as in claim 8,

wherein said ferromagnetic layers comprise materials having face centered cubic structures; and

wherein said conductive spacer comprises a material having a face centered cubic structure and wherein said absolute value is equal to or less than approximately 0.14 eV.

10. The sensor as in claim 8,

wherein said ferromagnetic layers comprise materials having a body centered cubic structure; and

wherein said conductive spacer comprises material having a body centered cubic structure.

11. A magnetoresistive sensor comprising:

first and second ferromagnetic layers, each having random crystallographic orientations, said first ferromagnetic layer having a first electronegativity; and

an electrically conductive spacer interposed between said ferromagnetic layers and having a random crystallographic orientation and having a second electronegativity so that an absolute value of a difference between said first and second electronegativities is minimized.

12. The sensor as in claim 11,

wherein said ferromagnetic layers comprise materials having face centered cubic structures; and