

Magnetism and Electron Configuration

Terms:

Ferromagnetic:

Paramagnetic:

To create an explanation for magnetism, let's start with the evidence of ferromagnetic elements and write their electron configurations and some of the elements located around them:

Elements	Shorthand Electron Configuration	Energy Level Diagrams	Pairing of 'd' orbitals
Fe			
Co			
Ni			
Cu			

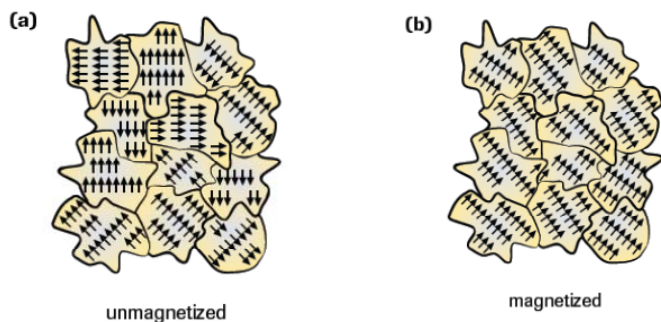
Based on the magnetism associated with electron spin and the presence of several _____, an initial explanation is that the unpaired electrons cause the magnetism.

However, the other _____ in the same _____ are only paramagnetic.

The presence of several _____ may account for some magnetism, but not for the strong _____.

The explanation is that _____ are small atoms and are able to _____ themselves in a magnetic field. This allows the individual atoms to influence each other and form _____. A strong external magnet cause the individual _____ so that their orientations are all the same forming a permanent magnet.

Ferromagnetism is a based on the properties of a _____, rather than just one_____.



Paramagnetism is also explained as being due to _____ within substances where _____ do not form. In other words, paramagnetism is based on the magnetism of_____.

Again, the theory of electron configurations is able to at least partially explain an important property of some chemicals. In this case, a full description of each electron, including its spin, is involved in the explanation.