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**Strontium incorporation in mullite-type Bi$_2$MgO$_4$**

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Bi$_2$MgO$_4$ compounds (M = Al, Ga, Fe) are described to have potential as electrolytes in solid oxide fuel cells (SOFC) [1]. The conducting properties could be related to an increased number of oxygen vacancies due to the requirement of charge neutrality with the substitution of Bi$^{3+}$ by Sr$^{2+}$ [2].

We have studied a number of magnets which share the common structural motif of wrinkled sheets of M$^4$µ$_3$Ta-TCNE sheets, (M = Mn, Fe; TCNE = C$_6$(CN)$_3$), with various units axially bonded to the metal sites. None could be obtained as single crystals, but four members of the family have all been solved from powder diffraction. The sheets are two dimensional ferrimagnets, with S=1/2 TCNE$^+$ coupled antiferromagnetically to the transition metals.

The materials display disparate bulk magnetic phenomena. A compound originally thought to be Fe(TCNE)$_2$µ$_3$Ta(solvent), which displays hysteressis and remnant magnetization below 97K, turned out to be M$^4$µ$_3$(TCNE$^-$)x(C$_6$(CN)$_3$)$_y$(solvent) [1]. The Mn analog is an antiferromagnet with susceptibility maximum at 72K. In both of those materials, the aforementioned M$^4$µ$_3$Ta-TCNE sheets are separated by diamagnetic (C$_6$(CN)$_3$)$_z$.[1] A material of composition FeCl$_4$(NCMe)$_2$(TCNE)$_2$, unexpectedly turned out to be [Fe$^2$(TCNE$^-$)$_4$(NCMe)$_2$][Fe$^{4+}$Cl$_4$]$_y$, displaying remnant magnetization below 90K.[2] That material has no covalent bonds between the magnetic sheets.

In contrast, Mn(TCNE)$_2$_µ$_3$(solvent)µ$_4$(solvent) is thought to owe its much higher magnetic ordering temperature of 171K to a three-dimensional network of magnetically active TCNE links between layers.[3] But this cannot be the whole story, because recently discovered Mn(TCNE)$_2$(OH)$_2$ has no bonds between adjacent layers, and has the same 171K transition temperature [4].

The structures give some insights to the various magnetic phenomena observed, but equally raise questions about the effect of bondig geometry on the magnetic coupling between the TCNE radical ion and transition metals.

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**Magnetoelastic effects in multiferroic YMnO3 and HoMnO3**

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The coupling between spin and lattice degrees of freedom is one