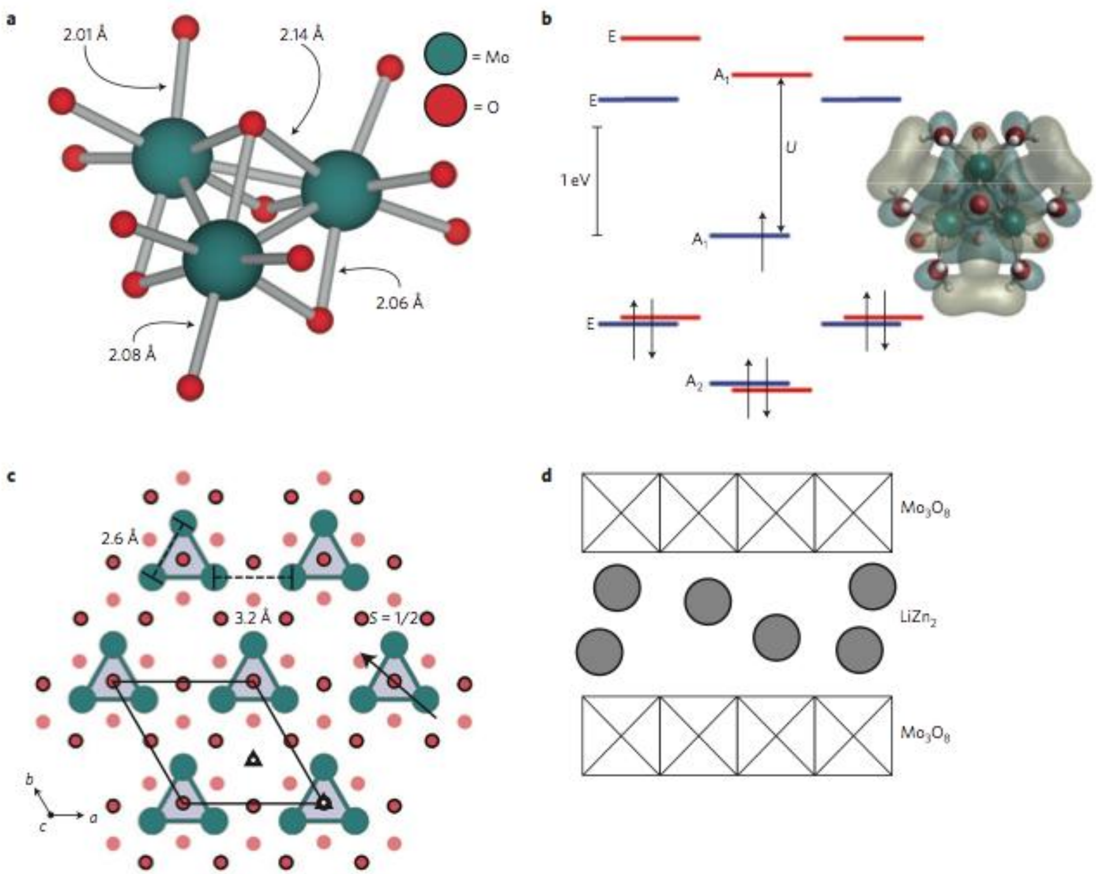
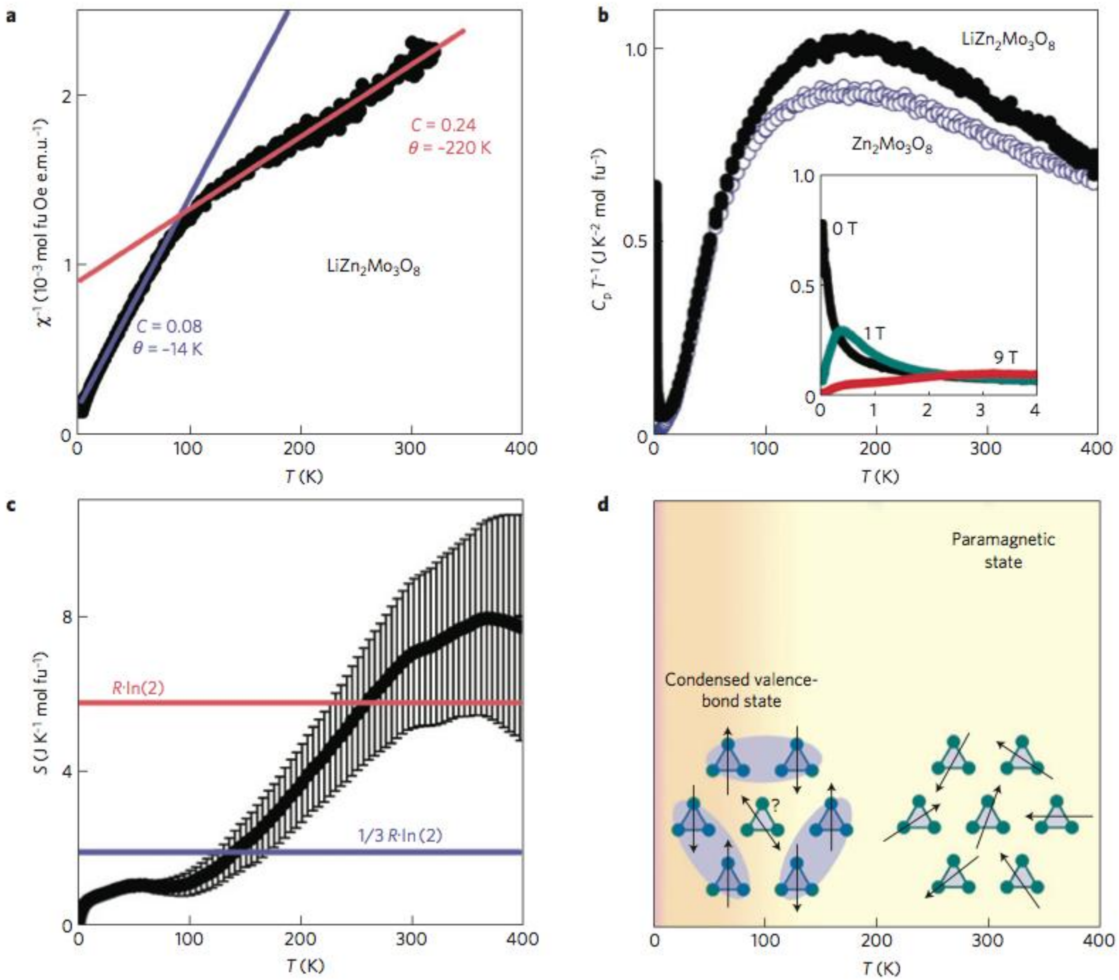
$LiZn_2Mo_3O_8$

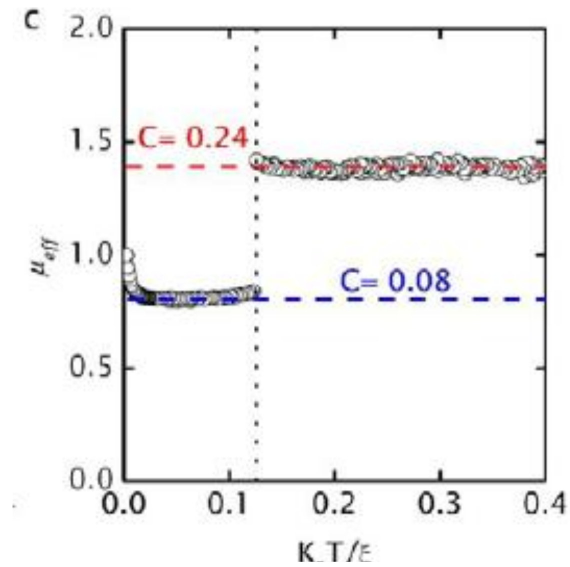
Sheckelton et al, Nature Materials 11, 493 (2012)



Molecular orbital picture of Mo triangle gives S=1/2 per triangle.

These triangles form a triangular lattice.





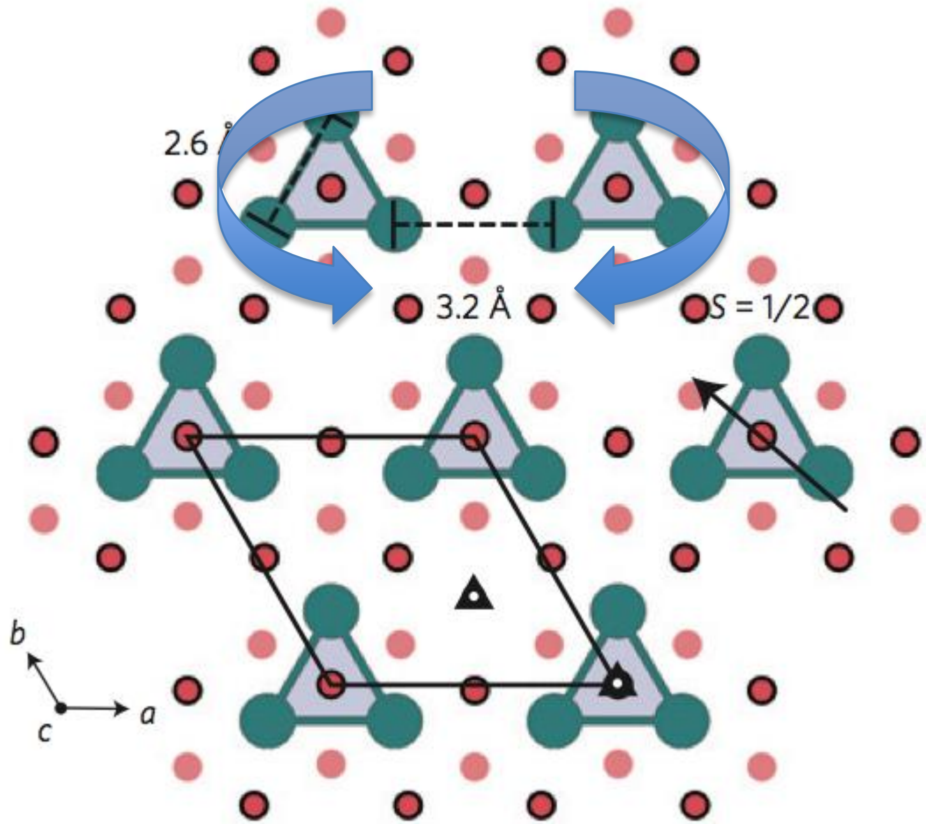
$$\mu_{eff} = \sqrt{\frac{3k_B}{N_A \mu_B^2}(\chi - \chi_o)(T - \theta)}$$

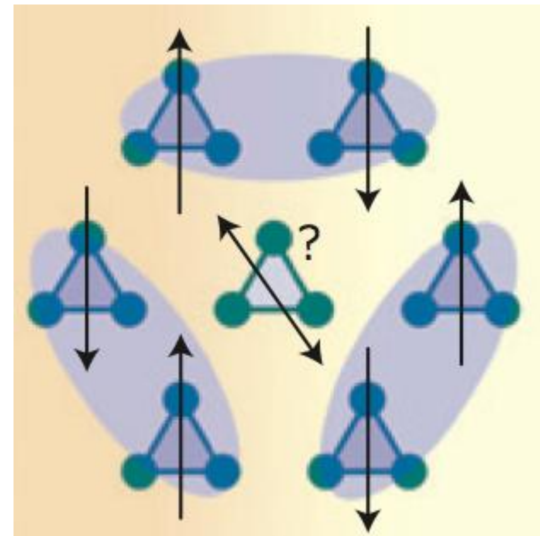
From Curie constant, g factor is 1.6, vs 2 for free spin ½. This may be due to spin orbit coupling.

$$g_m = g_e\left(1 - A\frac{\xi}{\Delta E}\right)$$

for Mo is $\xi = 0.068$ eV, similar to the value for Cu, $\xi = 0.100$ eV

Ongoing work with Rebecca Flint. Rotation of triangles shorten bonds between triangles on hexagon and lengthen bonds to central site.





Spin ½ on hexagonal lattice forms a gapped spin liquid which co-exists with isolated moments.

J1-J2 model ?

Detect rotation experimentally?