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Chemical control of geometrically frustrated magnets

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The chemistry of geometrically frustrated magnets - materials which are composed of networks of spins which typically cannot find conventional ordered ground states - has in the past been largely restricted to a few archetypes, including the pyrochlore lattice, the spinel lattice, and variants of the perovskite lattice. Even though these compounds have exhibited a rich variety of low-temperature ground states (such as spin glassiness in the absence of chemical disorder, spin ice states, and spin liquid states), new materials are now being discovered which test current models of magnetism within solids. This talk will outline new directions in geometrically frustrated magnetism research, and in particular will concentrate on how chemical control within these materials can be used to bring about unusual physical phenomena.