Interesting manifestations of metal-oxygen covalency in solid oxides

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Metal-oxygen covalent interaction is a common but important point of discussion in solid oxide compounds. Often it has been observed that the onset of a particular, significant covalence interaction drives a symmetry lowering of the solid phase which consequently affects the electronic structure and properties [1]. However, at times there are very microscopic effects that do not so much influence the global symmetry but still determines the physical properties of a material. Here, I would like to a case study on an oxychloride system where covalency drives unusual microstructural instabilities, strongly affecting its magnetic and dielectric properties [2,3].

References:

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