

# Multiferroicity due to Competing Spin Exchange in Antiferromagnetic Quantum Ribbon Chain Systems

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Due to complex entanglement of spin and orbital degrees of freedom, sometimes combined with charge ordering effects the magnetism of low dimensional quantum antiferromagnets is of special interest. In this respect the magnetic properties of antiferromagnetic quantum spin-systems with competing intrachain spin-exchange interactions recently have attracted particular attention since they may exhibit unconventional magnetic groundstates. Of special interest are systems that develop incommensurate magnetic structures and induce multiferroicity. This has been observed in a number compounds containing  $\text{CuX}_2$  ribbon chains. Such ribbon chains form when Jahn-Teller distorted anion octahedra enclosing the  $\text{Cu}^{2+}$  cations are linked via opposite edges of their basal planes to form infinite aggregates. In such ribbon chain systems, nearest neighbor spin exchange interaction via a Cu - X - Cu bond with bonding angle close to  $90^\circ$  is small and typically ferromagnetic so that next-nearest super-super exchange interaction via two intermediate anions can dominate the spin exchange interactions. I shall report on our recent research on some new systems featuring such ribbon chain compounds and discuss magnetoelastic anomalies associated with the onset of multiferroic ordering.