Molecular Beam Epitaxy of Binary and Ternary Manganese and Chromium Nitrides.

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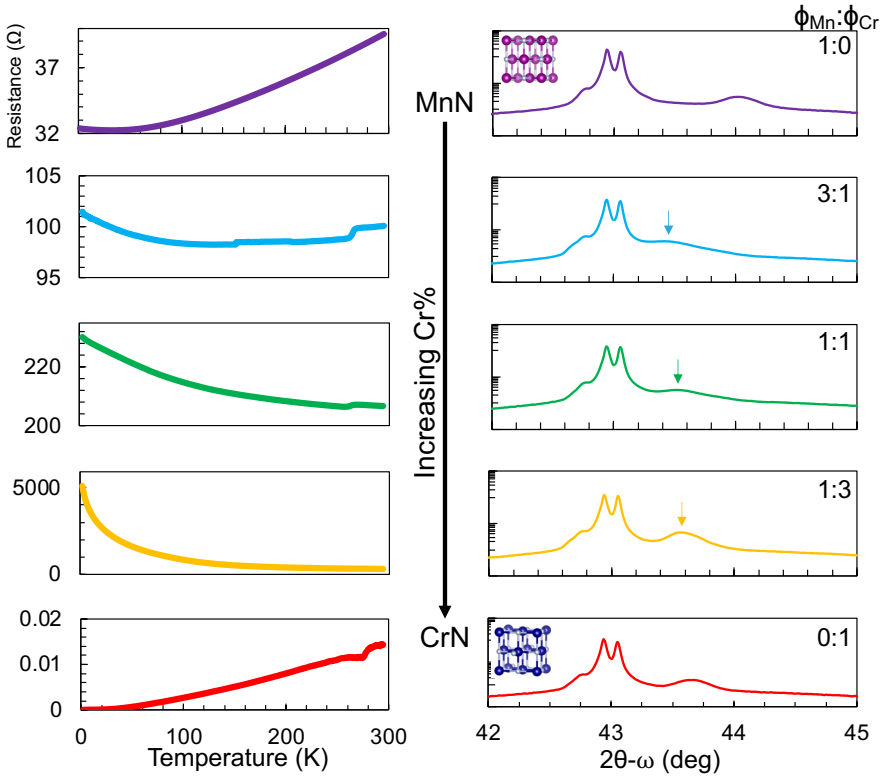
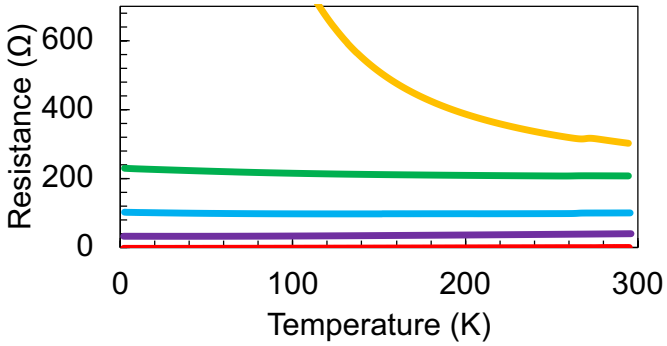


Left column: Resistance vs temperature for Mn_xCr_yN with increasing amounts of Cr (purple to red). The binary compounds are metallic, while the ternaries are semiconducting.

Right column: X-ray diffraction for the same Mn_xCr_yN samples deposited on MgO (001) substrates, the corresponding beam equivalent pressure ratio (Φ_{Mn}:Φ_{Cr}) are shown in the top right of each panel. The ternary compounds fall outside of the two binaries, suggesting a non-rocksalt phase.



The same resistance vs temperature data as shown above, but on the same y-axis. The Mn_xCr_yN sample with Φ_{Mn}:Φ_{Cr} of 1:3 shows the largest drop in resistance