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## Electronic and magnetic properties of the $(\text{Cr}_{84}\text{Re}_{16})_{100-x}\text{Mn}_x$ alloy system

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**Abstract content**   
 &nbsp; (Max 300 words)   
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The electrical resistivity ( $\rho$ ) and magnetisation ( $M$ ) of  $(\text{Cr}_{84}\text{Re}_{16})_{100-x}\text{Mn}_x$  alloys with  $x = 0.3, 0.4, 0.6, 0.8$  and  $3.1$  at.% Mn were studied as a function of temperature ( $T$ ) and applied magnetic field. Anomalies are observed in the  $\rho(T)$  curves corresponding to the Néel temperature ( $T_N$ ).  $M(T)$  curves in a constant small applied field (100 Oe) was obtained on increasing  $T$  after cooling in zero magnetic field (ZFC). Measurements were also done after cooling in a field of 100 Oe (FC). At  $T < 10$  K, a sharp increase in magnetisation is observed on increasing  $T$  after ZFC. A prominent sharp peak is observed close to 30 K beyond which the magnetisation rapidly decreases to lower values. In samples with concentrations 0.6, 0.8 and 3.1 at. % Mn, the magnetisation approaches zero above 30 K. In the FC state, there is a slower decrease in  $M$  on increasing  $T$  up to around 30 K beyond which the behaviour is identical to that observed in the ZFC state except for the alloy with 3.1 at. % Mn. In this case, the magnetisation obtained in both the FC and ZFC state first increases to a maximum value resulting in a peak before rapidly decreasing to low  $M$  values. The behaviour of  $M$  is indicative of possible spin glass state and is similar to behaviour that has been previously observed [1,2]. Results to test the characteristics of the spin glass state will also be presented.

[1] Galkin VY *et al*., J.Phys.:Condens Matter 7 L649 (1995)

[2] Galkin VY *et al*., J.Phys.:Condens Matter 8 7925 (1996)

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No

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N/A

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