INFLUENCE OF THE SHORT RANGE ORDER (SRO) ON THE ELECTRICAL CONDUCTIVITY OF THE MAGNETIC BINARY ALLOYS IN THE PARAMAGNETIC STATE

M. Lipowczan[a] D. Stysiak[b], W. Borgieł[b],
[a]Department of Biophysics and Cell Biology, University of Silesia,
Jagiellonska 28, 40-032 Katowice, Poland
[b]Chełkowski Institute of Physics,University of Silesia,
Uniwersytecka 4, 40-007 Katowice, Poland

9.7 cm

The model of the magnetic binary alloy which contains interacting itinerant electrons and localized spins was considered. The interaction between two kinds of electrons was assumed to be in the simple local exchange form. The complicated many body problem was reduced to the one particle one with the help of Coherent Potential Approximation (CPA). Itinerant electron selfenergy was calculated using standard Green's function technique with taking into account short range order within the localized spin system. Electrons' states were strongly affected by the magnetic ordering and correlations within localized moments (when $T > T_C$). The DC electrical conductivity expressed by Kubo-Grennwood alloy formula was calculated and analysed in detail in the paramagnetic region. The temperature derivative of the resistivity $\frac{d\rho}{dT}$ was found to be neither constant nor equals to zero but was negative or positive in dependence on the model parameters and had the structure just nearby the $T_C + 0^+$. Our investigations have shown that SRO in the localized spin subsystem has significant influence on the resistivity in the temperature range $[T_C, 2T_C]$.

13.4 cm

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Corresponding author :
D. Stysiak

Address for correspondence :
Chełkowski Institute of Physics
University of Silesia
Uniwersytecka 4, 40-007 Katowice, Poland

Email address :
sdawid@interia.pl