# Magnetic and Kondo behaviour in Ce8Pd24(Al1-xSnx) 

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# Abstract content <br> \  (Max 300 words)<br><a href="http://events.saip.org.za/getFile.py/ target="_blank">Formatting \&<br>Special chars</a> 

Ce8Pd24(Al1-xSnx ), $(0 \leq x \leq 1)$ has been studied by magnetic susceptibility, $\boxtimes(T)$, magnetization,
$\mathrm{M}(\mu 0 \mathrm{H})$, electrical resistivity, $\rho(\mathrm{T})$, thermoelectric power, $\mathrm{S}(\mathrm{T})$, and thermal conductivity, $\lambda(\mathrm{T})$, measurements. All investigated compositions crystallize in a cubic AuCu 3 - type crystal structure with space group $\mathrm{Pm}-3 \mathrm{~m}$ (No. 221). $\boxtimes(T)$ data at high temperature follows the paramagnetic Curie - Weiss relation with negative Weiss temperatures $\theta \mathrm{p}$ and effective magnetic moments $\mu$ eff close to the value of $2.54 \mu \mathrm{~B}$ expected for the free Ce3+ - ion. The low temperature dc $\boxtimes(T)$ data indicate an antiferromagnetic (AFM) anomaly for all compositions between $0 \leq \mathrm{x} \leq 1$, associated with a Néel temperature ranging from $\mathrm{TN}=4.3 \mathrm{~K}$ to 6.9 K between the two end compounds. Field - cooling (FC) and zero - field - cooling (ZFC) 区(T) data indicates spin - glass behaviour at Al concentrated alloys. $\rho(\mathrm{T})$ data is dominated by coherent Kondo lattice scattering for alloys in the concentration range $0 \leq x \leq 0.5$ and by crystal -electric field (CEF) effect for alloys with $x \geq 0.7$. At low temperature $\rho(\mathrm{T})$ data indicate a steep decrease at TN associated with magnetic phase transition also observed in the $\boxtimes(T)$ results. Below $T N, \rho(T)$ is described by a spin - wave dispersion relation. At low temperatures, $S(T)$ data measurements indicate an AFM transition at TN corresponding to the $\mathbb{X}(\mathrm{T})$ and $\rho(\mathrm{T})$ results. The high temperature $\mathrm{S}(\mathrm{T})$ data is described by the phenomenological resonance model giving the Kondo temperature TK and the characteristic temperature TCEF associated with crystal - electric field effect. $\lambda(\mathrm{T})$ increase linearly with temperatures from low T. The reduced Lorentz number, L/L0 increase upon cooling and exhibit maxima which decrease in magnitude with increase x , while the figure of merit ( $\mathrm{ZT}=\mathrm{S} 2 \mathrm{~T} / \rho$ ) exhibit maxima and minima upon cooling and the magnitude at room temperature decreases with x

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