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Intermediate valence and antiferromagnetic Kondo lattice behaviour in Ce(Au_{1-x}Ni_x)₂Si₂.

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<p>The transition from intermediate valence (IV) behaviour in CeNi₂Si₂ to magnetically ordered Kondo lattice behaviour in CeAu₂Si₂ is investigated through measurements of X-ray diffraction (XRD), electrical resistivity rho(T), magnetization sigma(μ0H) and magnetic susceptibility chi(T) on the polycrystalline Ce(Au_{1-x}Ni_x)₂Si₂ ($0 \leq x \leq 1$) alloy series. Lattice parameters as derived from XRD measurements deviate from Vegard's rule around $x = 0.6 - 0.8$. rho(T) data indicate Kondo lattice behavior in the presence of a crystal field for $x \leq 0.6$, the occurrence of magnetic ordering for $x = 0$ and fluctuating valency for $x \geq 0.8$. chi(T) data at high temperatures, follow the Curie-Weiss relation for alloys in the concentration $0 \leq x \leq 0.6$ (Kondo lattice region) and give effective magnetic moment values μ_{eff} close to that expected for the free Ce<sup>

3+</sup>-ion. The low temperature chi(T) data indicate the onset of antiferromagnetic ordering for $x \leq 0.78$. For alloys in the concentration range $0.8 \leq x \leq 1$ (IV region), chi(T) data are described within the framework of the paramagnon model. sigma(μ₀H) measurements indicate metamagnetic behavior for alloys in the concentration range $0 \leq x \leq 0.1$.

Level (Hons, MSc,
   PhD, other)?

Other

Consider for a student
   award (Yes / No)?

No

Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?

No

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