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$Nd(Fe_{1-x}Co_x)_{10}V_2$的MÖssbauer谱

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摘 要： 通过X射线衍射、磁测量和Mössbauer谱等测试方法研究了$Nd(Fe_{1-x}Co_x)_{10}V_2$的结构和磁性。结果表明：$Nd(Fe_{1-x}Co_x)_{10}V_2$(x =0, 0.05,0.1,0.15,0.2)化合物的晶体结构均为$ThMn_{12}$型结构；随着Co含量增大，晶格常数将单调减少，居里温度T_c呈单调增大，饱和磁化强度M_s逐渐增加。Co部分取代$Nd(Fe_{1-x}Co_x)_{10}V_2$中的Fe原子，将择优占据8i铁晶位。

关键字： $Nd(Fe_{1-x}Co_x)_{10}V_2$；择优占位； 晶体结构； 居里温度； 饱和磁化强度； Mössbauer谱

Mössbauer spectroscopy study of $Nd(Fe_{1-x}Co_x)_{10}V_2$

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Abstract: The crystal structure and magnetic properties of $Nd(Fe_{1-x}Co_x)_{10}V_2$ were studied by X-ray diffraction, magnetic measurements and Mössbauer spectroscopy methods. The following conclusions were obtained: All $Nd(Fe_{1-x}Co_x)_{10}V_2$(x =0, 0.05, 0.1, 0.15,0.2) compounds crystallize in $ThMn_{12}$-type structure; the lattice constants decrease monotonically with the increasing of Co atom content x, Curie temperature T_c increases monotonically with Co atom content x, and the saturation magnetization M_s increases gradually with Co atom content x. Substitution of Co for Fe leads to a monotonic increase of the hyperfine interaction field H_F on all Fe sites. Furthermore, the experiment results show that Co atom occupies

preferentially 8i Fe site in $Nd(Fe_{1-x}Co_x)_{10}V_2$ compounds.

Key words: $Nd(Fe_{1-x}Co_x)_{10}V_2$; preferential occupation; crystal structure; Curie temperature; saturation magnetization; Mössbauer spectroscopy

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