

Magnetic Transitions in $\text{ErCo}_{10}\text{Mo}_{2-x}\text{M}_x$ (M=Si and V)

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The intermetallic compounds of the type $\text{R}(\text{T},\text{M})_{12}$ (R=rare earths, T= Fe, Co, Ni and M=stabilizing elements like Mo, Si, V etc) that find many applications as permanent magnet materials exhibit tunable magnetic characteristics. Tuning of the magnetic anisotropy values, Curie and spin reorientation temperatures are made possible by replacing the constituting elements with others in specific proportions. X-ray powder diffraction and low field magnetization studies on $\text{ErCo}_{10}\text{Mo}_{2-x}\text{M}_x$ (M=Si, V) in the temperature range between 5K - 800K have revealed that:

i) all members of the family crystallize in ThMn_{12} type structure with tetragonal I4/mmm space group.

ii) Si for Mo replacement leads to a linear decrease of lattice parameters, a significant shift of T_c from 425K to 719K and a T_{sr} reduction from 139K to 74K.[1]

iii) V for Mo replacement leads to a linear decrease of lattice parameters, no significant change in T_c and a strong shift of primary T_{sr} from 139 to 350K.[2]

These findings together with structural and magnetic transition implications will be presented.

[1]Zhao Z.G., de Groot C.H., Brück E., Buschow K.H.J., de Boer F.R., *Physica B*, 1996, **228**, 214. [2] Brabers J.H.V.J., Zhou G.F., de Boer F.R., Buschow K.H.J., *J. Mag. Mag. Mat.*, 1993, **118**, 339-346.

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