



OPEN TALK ANNOUNCEMENT

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Speaker:

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Title:

Thermoelastic Study on CoNiAl Ferromagnetic Shapememory alloys using Vibrating Reed Apparatus

Abstract:

CoNiAl Ferromagnetic Shape memory Alloy because of its two phase microstructure and gamma phase precipitates is much ductile and practically useful material for sensors and actuators application. Keeping these points in view $Co_{39}Ni_{34}Al_{27}$, alloys $Co_{41}Ni_{32}Al_{27}$ were made using arc melting method and annealed at 1100 C/24h subsequently at 1200 C/72h. The structure and microstructure of the samples was studied using XRD, SEM and EDAX. The structural transformation temperatures were obtained using four probe resistivity measurement. The magnetic properties were studied using VSM within the range of 80 K to 400 K. The structural and magnetic transformation temperatures were found to be $T_{Ms} = 150K$, $T_{Mf} = 130$ K, $T_{As} = 164$ K, $T_{Af} = 184$ K and $T_{Ms} = 98$ K, $T_{Mf} = 74$ K, $T_{As} = 120$ K, $T_{Af} = 164$ K respectively and T_c was found to be 260 K for the case of 1st sample and for the next sample it is around 280 K. The elastic properties were studied on the reed shaped samples near the martensitic transformation. Near the structural transformation temperatures internal friction measurement shown sharp peaks and was also replicated in the sound velocity change. Results on such measurements were presented. Similar studies were also done on a FINEMET ribbon samples.

Keywords: CoNiAl Ferromagnetic Shape Memory Alloys, Sensors and Actuators, Thermoelastic Martensitic Transformation, Sound Velocity and Internal Friction

