ture and increases the thermal hysteresis width due to an increase in atomic disorder caused by Fe replacements. The Fe atoms in Mn sites have two magnetic configurations with magnetic moments of $0.8\mu_B$/Fe and $1.4\mu_B$/Fe in the martensitic orthorhombic structure, while Fe in Ni sites have magnetic moments smaller than $0.1\mu_B$/Fe. These results indicate that the Fe atoms are distinctly substituting either Mn or Ni and the decrease in the martensitic phase transition temperature for increasing Fe content can be mainly attributed to the Fe atoms in the Mn sites in both cases.

[13/05/10 - P036]
Thermodynamic and electrical properties of GdNiIn compound, J. André Filho, J. A. H. Coaquira, *Núcleo de Física Aplicada, Instituto de Física, Universidade de Brasília, Brasília, DF 70910-900, Brasil*, A. L. Lapolli, J. Mestnik-Filho, A. W. Carbonari, *Laboratório de Interações Hiperfinas, Instituto de Pesquisas Energéticas e Nucleares, Comissão Nacional de Energia Nuclear, Universidade de São Paulo,São Paulo, SP 05508-000, Brasil* ■ Rare-earth based ternary intermetallic compounds (R-T-X), with R=rare earth, T=transition metal and X=p-electron element, are interesting systems from the technological and basic research point of views. Rare-earth based ternaries are found to be promising alternatives as a hydrogen-storage method offering safety advantages over other types of hydrogen storage. They are attractive candidates due to their high hydrogen capacity per volume unit and their ability to absorb hydrogen under moderate conditions. On the other hand, R-Ni-In compounds which crystallize in the ZrNiAl-type hexagonal crystal structure, show interesting crystallographic features. R atoms occupy positions that form a triangular structure in a similar way as a Kagomé lattice does. That triangular coordination symmetry of R atoms can provide the ideal scenery for a geometrical frustration of magnetic interactions. In this work, the study of the structural, electrical and thermodynamic properties of GdNiIn is presented. Polycrystalline sample of GdNiIn were prepared from high pure elements by arc melting in argon atmosphere. The sample was annealed in vacuum at 800^oC for 48h to warrant the phase formation and homogeneous sample. Crystal-structure characterization and phase determination were carried out by X-ray diffraction (XRD). Magnetization (M) measurements were carried out using a commercial PPMS system in a broad range of temperature (2-300K) and magnetic fields up to 9T. DC resistivity (ρ) measurements were performed using the four-point probe method. XRD data analysis indicates the formation of the hexagonal structure with lattice constants a=0.7489(1) nm and c=0.3835(2) nm. M vs. T curve suggests a ferromagnetic order with a $T_C = 86K$. M vs. H curve obtained at 5K indicates that this compound shows an anhysteretic behavior and provides a saturation moment of $7.6\mu_B$. This value is in agreement with the effective magnetic moment ($\mu_{eff} = 8.2\mu_B$) obtained from the Curie-Weiss behavior above T_C. Those results indicate that the magnetism is associated with Gd^{3+} ions without any contribution coming from Ni ions. The ρ vs. T curve shows a metallic behavior and decreases linearly with the temperature until $\simeq 89K$. Below that temperature, a more pronounced decrease is observed until the value $48\mu\Omega.cm$ at 4.2K. That transition shifts towards higher temperatures after a magnetic field is applied and indicates that the magnetic order favors the carrier transport and that the magnetic and transport properties are correlated in this intermetallic.

[13/05/10 - P037]
The Effect of the Partial Substitution of Sn for metals 3d in the martensitic Ni2Mn1.44Sn0.56-type Heusler alloy, C. L. Córdova, Fernando M. Araujo Moreira, *Grupo de Supercondutividade e Magnetismo, Departamento de Física, UFSCar, SP-Brasil*, E C Passamani, A L Alves, P S Moscon, C Larica, A Y Takeuchi, *Laboratório de Espectroscopia Mössbauer e Magnetometria, Departamento de Física, UFES, ES-Brasil* ■ Reports in the literature show that the Heusler alloy $Ni_{50}Mn_{25}Sn_{25}$ presents martensitic phase transformation (MFT) when an excess of Mn atoms are in the Sn sites. It was also shown that the Mn or Ni partial substitution by Fe atoms in the $Ni_{50}Mn_{36}Sn_{14}$ martensitic alloy reduces the Mn-rich regions which present short-range antiferromagnetic interactions; consequently reducing the MFT temperature, being this transformation absent for Fe concentration larger than $10at.\%$. In this work, we prepared, by arc-melting furnace, two different series of samples, where we studied (i) the Fe localization and magnetism and also the origin of the reduction of the MFT observed after a partial substitution of Mn atoms by ^{57}Fe in the martensitic $Ni_{50}Mn_{36}Sn_{14}$. Heusler alloy (Series-A) and (ii) the possibility of MFT occurrence in the $Ni_{50}Mn_{25}Sn_{25}$ Heusler alloy when Sn atoms are substituted either by Cr or by Fe (Series-B). We characterize our samples by magnetization, scanning electron microscopy and ^{57}Fe Mossbauer Spectroscopy. The results show that there is a solubility limit in all partial substitutions done in this work, i.e., Mn substituted by Fe and also Sn substituted either by Cr or by Fe; being the solubility limit more restricted in the Series-B case, since we observed segregated phases in all Series-B samples, even for very low substitution levels (Cr or Fe < 3 at. %). We conclude that this segregation effect, observed in both Series-A and B, is the responsible one for the absence of the MFT observed in our samples. Specially, in Series-B, Cr_2Mn crystals, with polygonal shapes and sizes of about 2 μm to 5 μm, are formed during the phase segregation process in all Cr samples. For the series-A, our results also allow us to estimate to be about 2 % the solubility limit of ^{57}Fe in Mn sites of the $L2_1$-structure of the martensitic $Ni_{50}Mn_{36}Sn_{14}$ Heusler alloy. These Fe atoms are magnetic at 300K and have magnetic moment of 1,2 μ_B.

[13/05/10 - P038]
Control and Automation of a Home Made Vibrating Sample Magnetometer, V. B. Galdino, J. M. Soares, *Universidade do Estado do Rio Grande do Norte-UERN*, J. J. D. Monteiro, M. M. Xavier Jr, M. A. M. Torres, *Universidade Federal Rural do Sémi-Árido - UFERSA* ■ We have developed a system for magnetometry measurements. It uses the same principle as commercial vibrating sample magnetometers (VSM). This system can be used together with a