the intralayer Mn-Mn distance. The magnetic ordering of the Mn layers along the c-axis is antiferromagnetic for the smaller value than the critic intralayer Mn-Mn distance or ferromagnetic for the bigger than that value [1 and the references therein]. Since the intralayer Mn-Mn distance of the $SmMn_2Ge_2$ compounds is very close to the critic distance, the multiple magnetic phase transitions are observed as a function of the temperature. Because of the multiple magnetic phase transitions, this compound is very good candidate to investigate the magnetoresistance and magnetocaloric effect.
$SmMn_{2-x}Fe_xGe_2$ (x=0.05 and 0.1) and $SmMn_{2-x}Co_xGe_2$ (x=0.05 and 0.15) compounds are prepared by using arc melting under argon atmosphere. All compounds crystallize in $ThCr_2Si_2$-type tetragonal structure. The temperature and magnetic field dependence of magnetization are measured in an applied field up to 5 T between 10 and 350 K. The magnetocaloric effect-MCE is calculated by using Maxwell's relation and Landau theory. Both calculated MCE values are good accordance. For the $SmMn_{1.95}Fe_{0.05}Ge_2$ and $SmMn_{1.85}Co_{0.15}Ge_2$ compounds, the positive and negative MCE are observed. Resistivity measurements are performed by a four probe method as function of temperature (between 70 and 350K) and magnetic field (up to 7 T). The magnetoresistance effect is also observed at the metamagnetic transition. At T_C^{Sm}, the magnetoresistance effect $\Delta\rho/\rho$ is about -%20 and -%12, respectively.

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Keywords: magnetoresistance effect; magnetocaloric effect; magnetic measurements

FA4-MS06-P15

Structure-magnetism Relationship in Mononuclear Co(II) Complexes. Blažena Papánková[a], Roman Boča[a], Ľubor Dlháň[a], Ingrid Svoboda[b], Hartmut Fuess[b]. [a]*Institute of Inorganic Chemistry (FCHPT), Slovak University of Technology, 812 37 Bratislava, Slovakia.* [b]*Institut for Materials Science, Darmstadt University of Technology, 64289 Darmstadt, Germany.*
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Structure-magnetism relationship represents a long-lasting trend in the coordination chemistry. It is manifested by a number of magnetostructural J-correlations where the exchange coupling constant (J) is correlated with some structural parameters (bond angles in bridged complexes). Recently, a magnetostructural D-correlation has been proposed for Ni(II) complexes [1]. Within this contribution, a series of mononuclear Co(II) complexes has been synthesized and structurally characterized with the aim to correlate the zero-field splitting parameter (D) with the structural tetragonality of cobalt complexes.

[1] Boča, R.; Titiš, J. „Magnetostructural D-Correlation for Zero-Field Splitting in Nickel(II) Complexes" *in Coordination Chemistry Research Progress, Nova Science Publishers, New York,* **2007**, pp.247-304

Keywords: magnetic properties; cobalt compounds; structure correlation

FA4-MS06-P16

Structure of Liquid Crystalline Mono-substituted Ferrocene Derivatives. Naotake Nakamura[a], Kazuya Hiro[a], Kenjiro Uno[a]. [a]*Department of Applied Chemistry, Ritsumeikan University. Kusatsu, Shiga, Japan.*
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Liquid crystals containing metal are called metallomesogen. It is a great interest to develop the metallomesogens because it is expected to show interesting physical properties such as electrical, magnetic and so on in addition to liquid crystallinity. The liquid crystalline ferrocene derivatives are one of the metallomesogens. The structure of liquid crystalline phase may depend on that of crystal one. Therefore, it is important to analyze the crystal structure in order to understand the phase transition mechanism.
In our laboratory, many structural studies on liquid crystalline 1,1'-di-substituted ferrocene derivatives have been performed. The results obtained reveal three different crystal types, "S" shaped [1], "U" shaped [2] and "Z" shaped [3] structures. Recently, structure analysis of liquid crystalline mono-substituted ferrocene derivatives, of which substituent is the same as that of the 1,1'-di-substituted ferrocene ones, has carried out. The result obtained shows that it is closely resemble in the half of the structure of 1,1'-di-substituted ferrocene derivatives already analyzed [4].
In this study, the crystal structures of many other liquid crystalline mono-substituted ferrocene derivatives are determined by X-ray structure analysis. Using these results, correlation of the structures of 1,1'-di-substituted ferrocene derivatives with those of mono-substituted ones are discussed.

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Keywords: ferrocene compounds; liquid-crystal structures; X-ray structure analysis

FA4-MS06-P17

Crystallochemical Analysis of Pt-Re System. Elena Shusharina[a], Andrey Zadesenets[b], Sergey Gromilov[b]. [a]*Faculty of Natural Science, Novosibirsk State University, Russia.* [b]*Nikolaev Institute of Inorganic Chemistry, Novosibirsk, Russia.*
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Platinum and rhenium–platinum solid solutions are used as effective catalysts in petrol reforming. The synthesis of such compounds by using double complex salts as precursors is widely applied. A Pt-Re phase diagram belongs to the peritectic type, the two-phase region at