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**Study of the new diluted magnetic semiconductors based on the doping of iron-based superconductors** LI ZHANG, SHAN FENG, LINXIAN LI, SHAOLEI WANG, YUKE LI, China Jiliang Univeristy — Diluted magnetic semiconductors(DMSs) have attracted increasing attention because of their potential applications in spintronics. Recently, a series of new bulk DMS materials <sup>[1,2]</sup>were synthesized by doping in the 122 and 1111 phases of iron-based superconductors(Fe-SC), which sheds light on the DMS research<sup>[3]</sup>. In this report, we have synthesized two systems of 1111 phases of DMSs based on Fe-SC materials ( $\text{La}_{1-x}\text{Sr}_x$ ) ( $\text{Ag}_{0.925}\text{Mn}_{0.075}$ )SO( $x=0, 0.025, 0.05, 0.075$  and  $0.1$ ) and ( $\text{Y}_{1-x}\text{Sr}_x$ ) ( $\text{Cu}_{0.925}\text{Mn}_{0.075}$ ) SO ( $x=0, 0.025, 0.05, 0.075$  and  $0.1$ ) by solid state method. The structure and electrical, magnetic and optical properties have been investigated by means of XRD, 4KCCS, MPMS, PL, UV-Vis and Raman technique, respectively. Some interesting phenomena are found (Such as the Curie temperature  $T_c$  and band-gap energy  $E_g$  change regularly with the dopants additon). The results are helpful to clarify the intrinsic mechanism of the DMSs, and will provide new insights on the fabrication and application of devices based on these materials. This work was supported by the National Science Foundation of China (Grant No 61376094). Li Zhang would like to acknowledge a scholarship granted by China Scholarship Council (CSC-201408330028) **References:** [1] K.Zhao,Z.Deng and X.C.Wang et al., Nature Communications 4, 1442 (2013). [2] X.J. Yang, Y.K. Li, C.Y. Shen et.al., Appl. Phys. Lett. 103, 022410 (2013). [3]T. Ditel and H.Ohno, Rev.Mod.Phys., 86,187(R)(2014).

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