

Electrical transport measurement of small, irregular shape sample is difficult task. In order to overcome these limitations, this thesis employed a focused ion beam microfabrication. Process of microfabrication is successfully tested on a room temperature antiferromagnet CuMnAs. Temperature dependence resistivity and magnetoresistance of tetragonal bulk CuMnAs single crystal is found to be strongly anisotropic due to layered structure and magnetic order. Anisotropic magnetoresistance shows two fold symmetry and reached a magnitude of $\sim 0.12\%$. Employing the phenomenological Stoner-Wohlfarth we conclude that the sample has uniaxial magnetic anisotropy with an easy axis not pointing along any principal crystallographic direction and behaves like a two domain antiferromagnet.