

## The Effect of Co Doping in the Properties of the Lead Based Oxide

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The interest in spintronics have become enhanced after the discovery of the giant magnetoresistance. The materials suited for spintronics applications are magnetic gapless semiconductors. As a new class of gapless semiconductors, the properties of PbPdO<sub>2</sub> and its Co dopings were investigated. The resistivity data shows that the material shows a metal-insulator-like transition because of the thermally assisted excitation near the Fermi level due to its gapless band structure. The Hall measurements also show that the charge carrier density is near the level of which gapless semiconductors exists. The magnetic susceptibility data show an increase at low temperatures, to find the meaning of this increase the magnetization data was measured. There was a ferromagnetic component at these low temperatures which in comparison with the magnetoresistance data could be interpreted as magnetic ordering due to spin orbit coupling. With these facts we believe that the pbpdO<sub>2</sub> and its co doping has a high spin polarization and long mean free path.