**Effect of Li2O on physical, structural, thermal and electrical properties of MgO-V2O5 glasses**

**Vimi Dua and K.Singh\***

School of Physics and Materials Science, Thapar Institute of Engineering and Technology,

Patiala-147004, Punjab, India

\*kusingh@thapar.edu

Three compositions 75V2O5-25MgO, 75V2O5-16MgO-Li2O, 75V2O5-13MgO-12Li2O (MVL-0, MVL-9.0, MVL-12) have been synthesized by melt-quench technique. The addition of alkali metal oxide instead of MgO promotes the devitrification of magnesium vanadate glass. X-Ray diffraction pattern shows the amorphous nature of MVL-0 sample on the other hand MVL-9 and MVL-12 sample exhibit lithium vanadium oxide phase.The purpose of study is to understand the effect of Li2O on the glass formation and other properties. Density of sample increases with the increase in concentration of Li2O in the system. Porosity of sample is also calculated using theoretical and experimentally calculated density. The Raman spectra exhibit the broadness of band in MVL-0 sample as compared to other sample­s. As alkali oxide concentration increases, the band become sharp including some more new bands appear in Raman spectra which indicate the crystalline nature of MVL-9 and MVL-12. Change in conduction mechanism occur with the addition of alkali metal because of change in network structure. These samples may be used as cathode materials due to good conductivity at 250ºC for LT-SOFC.