ABSTRACT: Preparation of manganese oxide and lithium-manganese oxide thin layer on glass substrate by dip-coating method via sol-gel process have been investigated. Manganese (II) nitrate tetrahydrate and lithium chloride were used as precursors, isopropanol as solvent and DEA as additive. Dip-coating process have been done on glass substrate at 6 times with dipping time around 2 minutes for each layer process and dried at 110-120 °C around 15 minutes. Dried samples heated at 400 °C, 500 °C and 600 °C during 120 minutes. Black thin layer were obtained as products. The products were characterized by X-ray Diffraction (XRD) and Scanning Electron Microscopy (SEM). The XRD pattern was shown manganese oxide thin layer were obtained Mn$_2$O$_3$ only. Crystal structure of Mn$_2$O$_3$ was orthorhombic with crystallite size around 13.0 nm (JCPDS No. 24-0508). SEM image (at 500 °C) showed uniform and smooth surfaces with grain size around 0,01 µm. The XRD patterns showed that lithium-manganese oxide thin layer were obtained LiMn$_2$O$_4$ and small amount of Mn$_2$O$_3$. Crystal structure of LiMn$_2$O$_4$ was spinel with crystallite size around 16.86 nm (JCPDS No. 35-0782). SEM images (at 400 and 500 °C) showed fiber form were produced generally and spheric form at 600 °C.

Key words: lithium-manganese oxide, dip-coating, sol-gel, fiber, spheric,