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Structural and electrochemical properties of V_2O_5 and $Ag_xV_2O_5$ nanowires prepared by template assisted method M.B. SAHANA, C. SUDAKAR, R. NAIK, Department of Physics and Astronomy, Wayne State University, Detroit, MI 48201, V.M. NAIK, Department of Natural Sciences, University of Michigan-Dearborn, Dearborn, MI 48128 — Vanadium pentoxide and silver vanadium oxides are promising cathode materials for lithium ion battery as it allows easy intercalation/deintercalation of Li^+ due its open layered structure. During Li^+ intercalation energy is stored as chemical potential and during deintercalation the energy is released as electricity. Because of the large surface area nanostructured materials have enhanced energy storage capacity. We have prepared V_2O_5 and $Ag_xV_2O_5$ ($x= 0.1, 0.5$) nanowires by template assisted method using radiation track etched hydrophilic PC membrane. The nanowires were grown on ITO coated glass substrates for optical analysis and on stainless steel substrate for XRD, SEM, Raman and electrochemical measurements. The effects of Ag doping on the electrochemical properties of V_2O_5 nanowires were investigated using a three electrode cell with nanowires as working electrode and Li as counter and reference electrode and lithium perchlorate in propylene carbonate as the electrolyte. The electrochemical characteristics of V_2O_5 and $Ag_xV_2O_5$ nanowires such as lithium intercalation capacity, cyclic stability and diffusion coefficient will be presented.

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