

**PREPARATION AND CHARACTERIZATION OF PROTON-CONDUCTING
PHOSPHORIC ACID-DOPED SILICA GEL ELECTROLYTE FOR SECONDARY
BATTERY AT ROOM TEMPERATURE**

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Abstract

Solid-state electrochemical cells were fabricated using proton conducting phosphoric acid-doped silica gel as an electrolyte, zinc with zinc sulphate as a composite anode and γ -MnO₂ with graphite as a composite cathode material. H₃PO₄-doped silica gel was dried in oven at various temperatures for 1 h before fabricating the battery in order to reduce the possibility of corrosion. Subsequently the conductivity was measured as a function of the drying temperature of the gel. The fabricated all solid-state battery subjected to electrochemical characterization reveals several tens of charge-discharge cycles at relatively high current density. Cyclic Voltametry was carried out.

Keywords: Proton conductor, Battery, solid electrolyte, composite anode, composite cathode, silica gel.