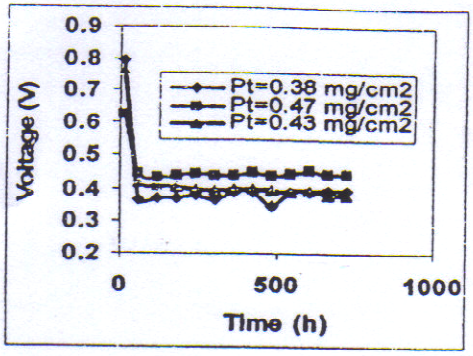

Fig.1. Current Vs Time of the MEA with various Pt loading, at room: temperature, stoichiometry H_2: Air = 1:2.

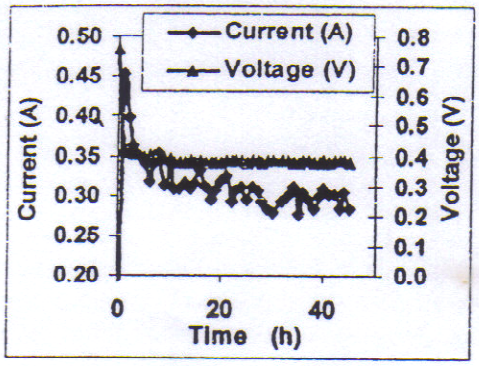

Fig.2. Polarization curve of the MEA with Pt loading 0.43 mg/cm^2 at room temperature, stoichiometry H_2 : Air = 1:2

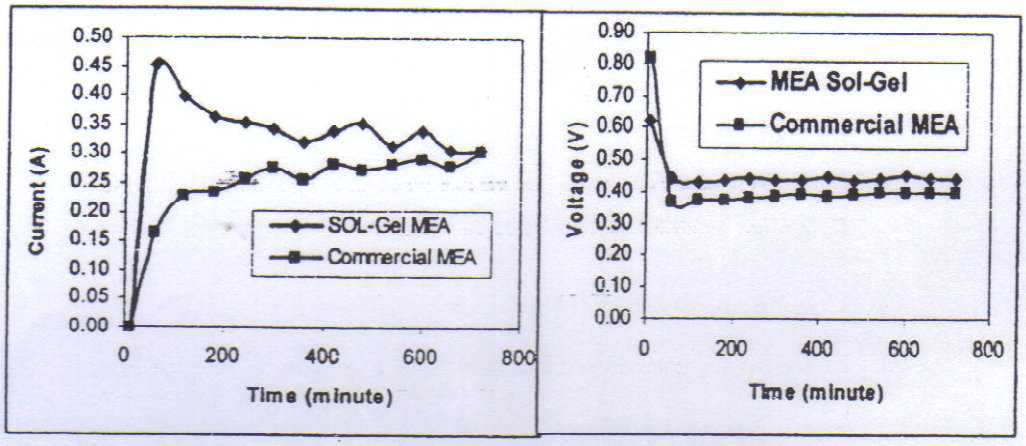

Fig. 3. Current Vs Time of the sol-gel MEA (Pt loading 0.38/0.38 mg/cm2 at the anode .and cathode)and Commercial MEA (Pt loading 0.38/1

Fig. 4. Voltage Vs Time of the sol-gel MEA (Pt loading 0.38/0.38 mg/cm2 at the anode .and cathode)and Commercial MEA (Pt loading 0.38/1 mg/cm2 at anode/cathode) at room temperature.

Scanning Electron Microscope (SEM)

Analyze the SEM needed to know the difference structure of catalyst layer using sol-gel casting and MEA conventional. Result of analysis expected difference of structure and pattern of spreading the catalyst particle over the electrolyte membrane. The result of SEM show for the MEA using sol-gel casting have Si/PWA thin layer (1 μm) over two surface of the membrane. The role of the film is to ménage water content in the membrane nafion 112 to overcome shrinking and swelling phenomena regarding better surface linking structure between catalyst and membrane so that the life time of the MEA increase.